

FELTER'S

NATURAL  
PRIMARY ARITHMETIC  
SERIES



FOR SCHOOLS

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NATURAL SERIES.

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AN

INTRODUCTION

TO THE

“ARITHMETICAL ANALYSIS,”

DESIGNED FOR

PRIMARY SCHOOLS,

CONTAINING

MENTAL, SLATE, AND BLACKBOARD EXERCISES.

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# INTRODUCTION.

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## SUGGESTIONS TO TEACHERS.

WE hope a few suggestions on the subject of teaching arithmetic will not be taken amiss by those teachers who may desire to use this little book. There is danger in teaching any of the elementary branches, of falling into a habit of monotony which soon robs both teacher and pupil of nearly all the interest they would otherwise feel in these studies. Variety in the exercises and in the methods of recitation are indispensable to a permanent interest in any study, and especially in elementary arithmetic. We propose, therefore, in a manner as brief and concise as possible, to present a few exercises, and give a few methods of recitation, not as the best or the only ones, but merely as suggestions to the ingenious teacher.

In Notation we may have,

EXERCISE I. Copy on the blackboard after the class have previously copied the same on their slates, say, Lesson III; let the teacher point to an exercise, No. 5, for instance, and require the class to read in concert, speaking promptly, and together, thus: *Four, nine, eight, &c.* Let the teacher continue this exercise until all can read the numbers readily and promptly.

EX. II. Let the teacher require each member of the class to read the same alone, until *each one* can read quickly and accurately.

EX. III. Let the teacher erase the numbers from the blackboard, and then require each member of the class to read the same from his slate, the teacher noting whether the lesson has been correctly copied.

EX IV. Let the teacher after examining the mechanical execution of the work, and requiring it to be erased, proceed to dictate the same lesson to the class. Let the class then be numbered by *twos*, and at a signal require them to exchange slates. Let the teacher then read aloud the same lesson from the book, and require each

pupil to note the errors by drawing a line under each number not correctly written. The errors should then be reported and the slates returned to their owners.

ADDITION.\*—Ex. v. Let the teacher require the pupil to commit and recite both forms of the table, after which let him be thoroughly questioned on the same. In this and in other exercises, the teacher will find that the practice of allowing the class to question an individual scholar, or a scholar to question his class, will exercise a great influence in promoting an interest in the study. This may not, at first, seem practicable, but experience has proved the results eminently satisfactory.

Ex. vi. (See note † Lesson 2.)

Ex. vii. Let the teacher read to the class an example, say, Ex. 1, Lesson 1, and then require some pupil to repeat the same from memory, and give the appropriate solution WITHOUT HESITATION.

Ex. viii. Let the teacher read an example for each member of the class, without waiting for a solution, and then require the solution of each example in the order in which it was read.

Ex. ix. Let the teacher require the class to sit or stand in a certain position, and then dictate numbers to be added by them mentally and silently, thus: the teacher says, (the class being in an exercise of fours,) "*Three, two, one, two, four,*" &c., to thirty or forty. When the teacher has finished, at a given signal all the class should raise their hands. Let the teacher require some one to give the sum, and all who agree with the result thus given to take down their hands. If any hands remain up, let the teacher call upon another, &c., until all are down, when he should announce the correct result. Care should be taken that this exercise be not so difficult as to prevent any from joining in it.

Ex. x. After the class have properly prepared their written exercises, let the teacher call for the *sum* of a certain example by number, and require some member of the class to read it. All who agree with the answer thus read, should raise the hand; if not correct, let another be called upon, &c. Finally, let the teacher announce the

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\*Nearly all the following exercises are equally applicable to the rules of Subtraction, Multiplication and Division.



correct result, and require each member of the class to note his errors by drawing a line under each incorrect answer.

Ex. XI. As often as practicable, let the teacher dictate numbers, to be added on the slate as a class exercise. Rapidity and accuracy should be the results sought for.

**SUBTRACTION.**—The teacher should give particular attention to the explanation of the method of subtraction. The old method of “borrowing ten and carrying to the next lower left hand figure to pay it,” should become, as it now is in our best schools, obsolete. The new method can be found fully explained in the First Book of the “Arithmetical Analysis.”

**DIVISION.**—It is very important that the two forms of Division be distinctly explained to the class before they are required to solve the mental examples under that rule. It can readily be made plain; thus: Take a number of cents, place them in a pile, and then divide it into a given number of equal parts. This is separating the Dividend into as many parts as there are units in the Divisor, and hence it may be called Division Proper.\*

Again, place the cents in a pile as before, and then ask how many oranges can be purchased at 3 cents each. As many oranges can be purchased, as the number of *times* 3 cents can be *subtracted* from the number of cents contained in the pile; and the 3 cents can be *subtracted* from the pile, as many times as 3 cents are contained in the number of cents in the pile. This is Division by subtracting the Divisor a certain number of times, (indicated by the Quotient,) from the Dividend, and hence may be called Division by Subtraction.\*

**CLASSIFICATION.**—Teachers, and especially those of our ungraded public schools, often complain that the time for the recitation of each study is necessarily too short. While we admit the justice of the complaint we think the difficulty, to some extent, may be obviated by giving more attention to classification. This we think especially true in regard to Arithmetic. Generally, there is more time WASTED in *hesitation*, than is USED in *actual recitation*. In *ten minutes* of

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\*These terms though not philosophically correct, yet perhaps will more distinctly point out the difference to a child than those implicating a knowledge of factors

active, prompt recitation, more can be accomplished than in *thirty* spent in hesitating and blundering. The teacher who attempts to gain time by crowding into one class scholars of different grades of progress and ability, in order to limit the number of recitations, commits a grave error. If he has too many studies in the school, it is better to drop some of them, for *Reading, Writing and Arithmetic* WELL learned, are far better than a smattering of the whole range of science. When dull, slow, and young pupils are placed in a class with those who are quicker and older, being continually surrounded by a maze of difficulties, they are necessarily soon discouraged, and consume more of the teacher's time in explanation than the whole class should consume in recitation. The quick and active, from not being allowed to exercise the full scope of their powers, soon contract the habit of lazy carelessness. In schools where proper classification is neglected, idleness, carelessness and inattention must necessarily exist.

**THOROUGHNESS.**—The importance of being thorough in the elements of Arithmetic can not be too often impressed upon the teacher. He, influenced by a strong desire to please both parent and pupil, is subject to a great temptation to hurry his scholars through text-books faster than is consistent with their best interests. Parents are, generally, far more practical than the teacher, and although they may for a time be deceived by *book progress*, yet their keen perceptions of practical results, will soon discover the flimsy cheat, and hold the author in just contempt.

In order to secure thoroughness, give *short* lessons, and spend much time in daily review. If in the exercise of "fours," do not proceed until everything that precedes is as familiar as the alphabet. If it requires one month, take it, if *one year*, the time can not be better spent. Never allow a pupil who, habitually, misses over *ten* per cent. of the given exercise to remain in the class, for it is far better for a scholar to be at the head of a *low* class, than at the *foot* of a *high* one. Never rob your scholars of the credit due their efforts by asserting continually that their lessons are *easy*; rather cultivate their self-confidence by causing them to feel a conscious ability to do even more than you require of them.



SECTION I.  
NOTATION AND NUMERATION.

LESSON I.

Written. Printed. Roman.			Written. Printed. Roman.		
One pump ;	1, 1 ;	I.	Six birds ;	6, 6 ;	VI.
Two houses ;	2, 2 ;	II.	Seven windows ;	7, 7 ;	VII.
Three cows ;	3, 3 ;	III.	Eight geese ;	8, 8 ;	VIII.
Four men ;	4, 4 ;	IV.	Nine sheep ;	9, 9 ;	IX.
Five trees ;	5, 5 ;	V.	Ten posts ;	10, 10 ;	X.

## LESSON II.

## EXERCISES IN NOTATION.

Figures as written.	Figures as printed.	Names.	Figures as written.	Figures as printed.	Names.
0	0	naught.	15	15	fifteen.
1	1	one.	16	16	sixteen.
2	2	two.	17	17	seventeen.
3	3	three.	18	18	eighteen.
4	4	four.	19	19	nineteen.
5	5	five.	20	20	twenty.
6	6	six.	21	21	twenty-one.
7	7	seven.	22	22	twenty-two.
8	8	eight.	30	30	thirty.
9	9	nine.	40	40	forty.
10	10	ten.	50	50	fifty.
11	11	eleven.	60	60	sixty.
12	12	twelve.	70	70	seventy.
13	13	thirteen.	80	80	eighty.
14	14	fourteen.	90	90	ninety.

Figures as written.	Figures as printed.	Names.
100	100	one hundred.
200	200	two hundred.
300	300	three hundred.
101	101	one hundred and one.
102	102	one hundred and two.
103	103	one hundred and three.
111	111	one hundred and eleven.
112	112	one hundred and twelve.
113	113	one hundred and thirteen.
120	120	one hundred and twenty.

LESSON III.

\*Copy and read the following numbers:

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	9	4	9	4	4	8	9	9	4	9	4	6
2	1	3	1	9	1	6	8	1	1	8	1	7
3	8	7	3	8	8	9	3	8	8	3	9	7
4	7	8	7	8	3	7	4	3	9	9	8	4
5	0	9	8	7	7	8	9	8	3	1	3	8
6	9	1	9	1	9	3	8	7	9	6	4	3
7	6	6	1	9	8	9	9	5	8	7	7	4
8	0	7	3	6	3	8	1	6	6	8	8	1
9	9	8	9	9	4	7	3	9	7	9	9	8

LESSON IV.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10	30	40	50	40	40	40	80	40
20	70	70	80	30	80	80	70	60
30	60	80	70	90	70	60	30	90
40	80	60	60	90	10	30	60	80
50	90	20	90	60	00	90	70	90

\*NOTE FOR THE TEACHER.—The teacher should require these exercises to be copied neatly upon a slate or paper, and read as a class exercise, individually, or by the class in concert. Particular attention should be given to the *formation of the figures*.

N. B.—The teacher should not fail to spend a portion of each recitation in dictating numbers to be written by the class; for, unless this is done, only *half* of Notation will be learned. We would suggest that the teacher dictate each lesson given in the book, each pupil copying the same on the slate as it is dictated. Let each pupil then exchange slates with his neighbor, and note the errors made by him, by drawing a line under each number not correctly written, while the teacher again reads the numbers from the book, thus making each pupil a critic upon his neighbor's work. Continue this exercise until the class can write as accurately as they read. A record of the recitation of each pupil should be kept for reference.

60	70	10	80	70	90	90	80	30
70	60	90	80	50	70	70	60	80
80	00	60	70	60	60	60	70	70
90	30	30	60	30	70	30	30	60

## LESSON V.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
22	99	55	99	22	55	44	44	99	44
66	77	88	33	11	88	11	66	66	22
44	88	77	77	88	44	77	22	44	88
22	66	88	11	66	33	66	33	55	55
88	44	66	55	22	55	44	77	88	77
77	22	44	77	55	22	77	22	00	55
33	77	66	55	22	88	22	66	11	00
44	11	77	44	11	22	33	11	88	77

## LESSON VI.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
21	41	91	61	31	72	32	62	72	62
31	81	61	91	81	82	42	32	32	52
71	71	31	81	91	92	72	52	22	32
81	61	41	31	61	32	62	62	12	72
61	91	81	41	71	72	32	72	92	62
81	11	51	81	51	62	82	32	52	72
41	41	91	61	51	22	22	52	92	52
91	51	71	51	31	52	22	52	22	12

## LESSON VII.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
33	33	63	14	64	54	65	25	95
23	53	43	74	34	14	35	65	75
53	73	23	64	94	54	75	55	35
63	53	93	54	24	34	55	25	95
53	73	93	14	24	54	15	25	65
93	43	13	54	24	74	65	25	75
73	23	43	94	74	54	75	65	25
93	93	13	54	04	64	55	15	65

## LESSON VIII.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
66	76	36	77	37	57	18	68	78	69	49	79
86	46	86	17	67	17	28	38	88	99	69	69
96	86	76	27	57	87	38	58	08	19	89	89
46	96	96	87	67	67	68	78	98	09	39	99
86	76	66	37	97	97	98	38	78	29	79	29
46	86	86	47	87	87	88	68	68	39	69	39
96	46	06	67	37	37	78	88	38	69	39	79
86	76	76	97	67	47	98	78	78	89	89	69

## LESSON IX.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
46	68	80	56	68	46	41	41	68	41	41	37
89	37	60	11	74	83	86	89	93	83	89	86
78	89	37	10	83	98	91	67	97	67	67	97
37	34	34	01	89	30	87	83	83	83	83	83
66	76	04	11	67	67	83	91	97	97	84	89
41	46	66	13	03	83	68	73	86	86	89	67
38	89	99	22	09	97	78	91	67	67	76	60
70	70	78	33	70	81	32	37	83	83	86	30



## LESSON X.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
100	800	900	600	900	888	888	999	777	999
200	600	400	800	600	666	333	888	888	888
300	900	600	300	300	444	777	333	333	666
400	300	900	700	700	333	333	111	777	777
500	600	400	600	800	999	888	222	666	333
600	800	300	300	900	666	666	333	888	444

## LESSON XI.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
146	156	157	187	178	273	246	286	278	278
186	186	168	107	108	286	289	273	286	283
174	137	193	100	101	207	278	243	237	296
145	182	107	186	100	201	209	262	241	271
183	193	109	106	198	271	290	283	262	240
197	178	108	108	000	268	270	291	268	240

## LESSON XII.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
378	396	407	507	637	707	880	960	437	110
396	378	409	500	649	709	860	940	609	101
347	307	403	569	687	700	893	980	708	001
378	311	408	511	683	711	808	908	808	301
386	341	400	522	621	701	880	960	607	103
307	369	406	589	637	710	870	906	706	031

## LESSON XIII.

(1)	(2)	(3)	(4)	(5)	(6)	(7)
1,000	4,000	4,000	46,000	83,684	33,870	66,907
2,000	8,000	8,000	86,000	83,789	44,968	77,003
6,000	6,000	6,000	97,000	83,986	55,708	88,806
8,000	9,000	9,000	37,000	83,689	88,070	33,403
9,000	7,000	3,000	40,000	83,417	66,407	66,907
3,000	3,000	7,000	80,000	83,404	88,006	44,603



## LESSON XIV.\*

(1)	(2)	(3)	(4)	(5)	(6)	(7)
91,868	65,870	87,000	41,734	41,862	41,864	41,890
91,674	65,001	87,408	68,783	91,878	89,608	60,004
91,410	65,680	87,007	91,860	38,786	91,837	90,008
91,800	65,012	87,008	41,307	41,837	60,382	30,100
91,410	65,101	87,680	40,037	89,186	46,867	70,864
91,001	65,001	87,708	86,013	41,837	89,371	01,010
91,625	65,200	87,905	45,702	27,529	95,296	20,002

## LESSON XV.

(1)	(2)	(3)	(4)	(5)	(6)
467,918	460,891	200,040	307,064	401,864	301,413
467,001	460,013	200,110	309,083	908,864	401,108
467,308	460,108	200,301	691,837	301,837	600,307
467,001	460,000	900,041	001,301	003,907	900,609
467,000	460,660	900,008	607,013	900,869	801,300
467,781	460,141	900,900	901,803	701,803	608,400
467,525	460,262	500,244	209,502	450,002	572,909

## LESSON XVI.

(1)	(2)	(3)	(4)
1,000,000	9,444,444	5,600,800	8,786,413
6,000,000	8,333,333	3,700,900	9,187,687
8,000,000	6,888,888	9,000,600	8,913,418
9,000,000	4,777,777	3,007,007	6,701,384
4,000,000	3,666,666	8,004,004	8,870,010
8,000,000	9,111,111	2,001,001	3,896,041
7,000,000	2,555,555	1,060,200	5,473,256

\* NOTE FOR THE TEACHER.—The Author does not intend to make a book <sup>to</sup> take the place of the living teacher, consequently he does not wish to burden its pages with explanations and remarks about subjects with which the teacher is perfectly familiar. His object, as before stated, is to aid the teacher in giving the pupil SOMETHING TO DO. The teacher can explain to the pupil the *how* and the *why*, much better than the author.

# ADDITION



## SECTION II.

### LESSON II.

1. There are 4 bushels of salt in 1 bag, and 2 in another; how many bushels in both?

FORMULA.—If there are 4 bushels of salt in one bag, and 2 bushels in another, there is in both the sum of 4 bushels and 2 bushels, which is 6 bushels; therefore in both bags there are 6 bushels.

2. Charles had 2 marbles, his brother gave him one more; how many had he then?

3. Susan had 3 pins in her cushion, she found 1 more; how many pins had she then?

LESSON II.

TABLE.\*

1	and	0	are	1.	2	and	0	are	2.
1	and	1	are	2.	1	and	2	are	3.
2	and	1	are	3.	2	and	2	are	4.
3	and	1	are	4.	3	and	2	are	5.
4	and	1	are	5.	4	and	2	are	6.
5	and	1	are	6.	5	and	2	are	7.
6	and	1	are	7.	6	and	2	are	8.
7	and	1	are	8.	7	and	2	are	9.
8	and	1	are	9.	8	and	2	are	10.
9	and	1	are	10.	9	and	2	are	11.
10	and	1	are	11.	10	and	2	are	12.

BLACKBOARD EXERCISES.

					(3)	(4)	(5)
					5	5	5
†5	6	8	9	1	†2	2	1
2	2	2	2	2	2	2	2
—	—	—	—	—	2	2	2
					2	2	1
					2	2	2
					2	2	1
0	2	3	7	4	2	2	1
2	2	2	2	2	2	2	1
—	—	—	—	—	2	2	2
					2	1	2

NOTES FOR TEACHERS.—\* The pupil should be required to commit both forms of the Addition tables; and beside this, the teacher should thoroughly question him upon them, until he becomes accurate and prompt in his answers.

† The teachers should copy these exercises upon the blackboard, and, pointing to each of the columns successively, require a pupil, or the class in concert, to name the sum of each column instantaneously: thus (pointing to the left-hand column) the pupil should say, "Seven," not, "Two and five are seven:" pointing to the next column, the pupil should at once say, "Eight;" not, "Two and six are eight."

‡ These exercises in adding columns at sight, should be practiced in the following manner: Copy the exercise on the blackboard; let a pupil, or the class in concert, commence at the bottom and add, repeating only the result of each addition; thus, (Exercise 3rd,) 2, 4, 6, 8, 10, 12, &c., to fifty or more, as the teacher may judge best. Let the tables and exercises be thoroughly learned for "What is worth doing at all, is worth doing WELL."

## LESSON III.

## MENTAL EXERCISES.

1. John has 5 apples, and his father gives him 2 more. how many has he then?

SOLUTION.—If John has 5 apples, and his father gives him 2 more, he then has the sum of 5 apples and 2 apples, which is 7 apples.

Therefore, if John has 5 apples, and his father gives him 2 more, he then has 7 apples.

2. James has six apples, and buys one more; how many apples has he then?

3. If I buy 2 quills for two cents, and 4 quills for 4 cents, how many quills have I?

4. Henry has two tops, and buys 4 others; how many has he then?

5. If you buy 2 peaches for two cents, and nine peaches for 9 cents, how many do you buy in all?

6. Susan has 2 cherries in her hand, and has just given away 7; how many had she at first?

7. Laura had 6 apples, and her mother gave her 2 more; how many had she then?

8. George bought 5 marbles, and his brother gave him 7 more; how many had he then?

9. If I buy 2 tops for eight cents, and 6 tops for 12 cents, how many tops do I buy in all?

10. If I buy 2 tops for eight cents, and 4 tops for 2 cents, what do my tops cost me?

11. If I buy a slate for 10 cents, and a pencil for 2 cents, what do both cost?

12. John sold a knife for 9 cents, and a pencil for 2 cents; how much did he receive for both? /

LESSON IV.  
WRITTEN EXERCISES,

In which the sum of each column does not exceed nine.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
201	320	102	210	210	012	102	102	200
012	212	210	102	102	200	222	201	102
201	102	102	222	201	002	100	202	201
210	201	201	102	200	102	210	221	222

(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1012	2012	2012	2012	2102	2010	2201	2121
0121	0122	2012	2001	2011	0121	2012	0121
2012	0101	2120	0211	0121	2012	1021	2012
1012	2012	1012	0222	2010	1012	1021	2012

## LESSON V.

(18)	(19)	(20)	(21)	(22)	(23)
10212	21212	21210	21211	212112	21211
21021	10212	20121	21221	212112	21211
21102	22121	21021	10221	210211	21221
20121	21120	10222	10212	102122	01211

(24)	(25)	(26)	(27)	(28)	(29)
21212	21021	20121	21012	21221	21211
12110	20122	92110	20121	21012	22122
02102	21021	21012	10122	22011	20121
21022	20122	22101	20121	21012	10121

(30)	(31)	(32)	(33)	(34)	(35)
10121	21021	20121	21210	21021	21012
21012	20112	21122	21012	20112	20112
210	22102	02122	21101	10221	01221
1012	10121	21012	10210	20121	20121

## LESSON VI.

## TABLE.

1 and 3 are 4.	4 and 3 are 7.	7 and 3 are 10.
2 and 3 are 5.	5 and 3 are 8.	8 and 3 are 11.
3 and 3 are 6.	6 and 3 are 9.	9 and 3 are 12.

*Table Exercise.*

10 + 3 = ?	11 + 3 = ?	12 + 3 = ?	13 + 3 = ?	14 + 3 = ?	<i>etc.</i>
20 + 3 = ?	21 + 3 = ?	22 + 3 = ?	23 + 3 = ?	24 + 3 = ?	<i>etc.</i>
30 + 3 = ?	31 + 3 = ?	32 + 3 = ?	33 + 3 = ?	34 + 4 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

NOTE.—The above and following *Table Exercises* should be extended and completed on the slate or blackboard, and the pupils drilled upon them until every combination is thoroughly learned.

## BLACKBOARD EXERCISES.

					(3)	(4)	(5)	(6)
					2	2	2	2
0	1	(1) 9	2	8	3	3	3	1
3	3	3	3	3	3	3	3	3
—	—	—	—	—	3	3	3	2
					3	3	3	2
					3	3	3	1
3	7	(2) 4	6	5	3	3	3	3
3	3	3	3	3	3	3	3	2
—	—	—	—	—	3	1	2	1
					—	—	—	—

NOTE.—These exercises are to be recited in the same way as the similar exercises preceding.

## LESSON VII.

## MENTAL EXERCISES.

1. Charles has 3 nuts in one hand and 3 in the other: how many has he in both?

SOLUTION.—The same as in Lesson II.

2. Oscar has 5 pencils, and Joshua has 3; how many have both?

3. William has three rabbits, and Henry has 9: how many have both?

4. Ella has 4 birds in one cage, and 3 in another; how many has she in both?

5. Myra had 8 pins in her cushion, and then put in 3 more; how many had she then?

6. Carrie had 3 needles, and then bought eight; how many had she then?

7. John buys 4 tops for 12 cents, and 3 tops for 9 cents; how many tops has he in all?

8. George buys 3 pears for four cents, and two pears for 3 cents; how much do his pears cost him?

9. Julius bought 10 pears for 10 cents, and three pears for three cents; how much did they cost him?

10. Charles has no rabbits, and Henry has three; how many have both?

11. Alfred caught 3 birds, and Jason caught one; how many did they both catch?

12. James had 2 marbles, and afterward won 9 from Charles; how many had he then?

13. If an orange costs 3 cents, and 4 oranges cost 7 cents, how much do all cost?

14. Gertrude had 3 cents given her by her uncle, then her mother gave her 9 more; how many cents had she in all?

## LESSON VIII.

## WRITTEN EXERCISES.

(36)	(37)	(38)	(39)	(40)	(41)	(42)
5101	2031	3012	31012	31213	2123	3121
2103	2103	3331	32103	12132	3211	2103
2101	3011	1032	13312	21312	2312	1331
0133	3011	0301	23331	31011	1031	0112
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(43)	(44)	(45)	(46)	(47)	(48)	(49)	(50)
3132	3102	3103	3102	3102	3121	2132	3121
2132	1031	0132	3012	0312	0130	1201	0301
0301	3012	3213	0131	3101	2132	3103	1333
3012	3111	3011	2132	2132	1113	2301	2233

## LESSON IX.

\*Exercises in which the sum of each column equals or exceeds ten, but is less than twenty.

(51)	(52)	(53)	(54)	(55)	(56)	(57)
3121	3132	1323	3103	31213	31232	3123
3233	2133	2323	3213	23132	32133	2323
3233	3032	3223	2133	21332	32332	3233
2332	3321	3332	3321	33213	32223	2132
3123	3333	2332	2332	23323	23322	3212
3321	2332	3212	0323	32133	12233	3332

(58)	(59)	(60)	(61)	(62)	(63)
31333	21321	32212	23213	32213	32132
23213	01332	31232	23223	32123	02321
31220	32132	21332	32213	32233	31223
33303	32013	21321	33223	32213	20301
10332	32103	33233	13322	32132	21303
12321	23321	13321	32332	21331	33233

(64)	(65)	(66)	(67)	(68)	(69)	(70)
2133	2132	3213	32212	23121	23321	24323
3103	3233	2232	33132	32221	30232	22322
2332	3213	2232	22322	33233	23213	32132
2332	2303	2232	33232	23213	32332	32232
3212	1332	3213	10232	20322	23323	23312

\* NOTE FOR THE TEACHER.—Before performing these exercises, the teacher should take occasion to explain to the class the method of carrying. The teacher can explain it in his own way much better than the author could, should he attempt it.



LESSON X.

TABLE.

1 and 4 are 5.	4 and 4 are 8.	7 and 4 are 11.
2 and 4 are 6.	5 and 4 are 9.	8 and 4 are 12.
3 and 4 are 7.	6 and 4 are 10.	9 and 4 are 13.

Table Exercise.

10 + 4 = ?	11 + 4 = ?	12 + 4 = ?	13 + 4 = ?	14 + 4 = ? etc.
20 + 4 = ?	21 + 4 = ?	22 + 4 = ?	23 + 4 = ?	24 + 4 = ? etc.
30 + 4 = ?	31 + 4 = ?	32 + 4 = ?	33 + 4 = ?	34 + 4 = ? etc.
40 + 4 = ?	41 + 4 = ?	42 + 4 = ?	43 + 4 = ?	44 + 4 = ? etc.
50 + 4 = ?	51 + 4 = ?	52 + 4 = ?	53 + 4 = ?	54 + 4 = ? etc.
etc.	etc.	etc.	etc.	etc.

BLACKBOARD EXERCISES.

		(1)			(3)	(4)	(5)	(6)	(7)
					3	2	2	2	2
1	9	2	0	8	4	4	4	4	1
4	4	4	4	4	4	4	4	4	4
-	-	-	-	-	4	4	4	4	2
					4	4	4	4	3
		(2)			4	4	4	4	2
3	7	4	6	5	4	4	4	4	1
4	4	4	4	4	4	4	4	4	4
-	-	-	-	-	4	1	2	3	1
					—	—	—	—	—

NOTE.—See similar preceding exercises and the method of recitation.

LESSON XI.

MENTAL EXERCISES.

1. There are 4 boys in the first class, and 4 in the second class ; how many in both classes ?

NOTE.—The solution is the same as in the preceding exercises.

2. Samuel drives 4 cows to pasture, and Lewis drives five ; how many do both drive ?

3. A dairyman made 4 cheeses in one week, and 6 in another ; how many cheeses did he make in both weeks ?

4. A grocer sold four pounds of rice to one man, and 9 pounds to another; how many did he sell to both?

5. A merchant sold 7 yards of calico to one customer, and 4 to another; how many did he sell to both?

6. Thomas had 4 sheep in one pasture, and 10 in another; how many had he in both?

7. Samuel bought 2 sheep for 9 dollars, and 2 lambs for 4 dollars; how much did they all cost him?

8. If 4 scholars sit on one bench and 11 on another, how many sit on both?

9. There are 10 scholars in the school-house, and 4 are having a recess; how many scholars in the school?

10. There are 4 broken panes of glass in one window, and none in another; how many in both?

11. If it is 4 miles from Newark to Belleville, and 8 from Belleville to Patterson, how far is it from Newark to Patterson?

12. If there are 9 dozen sheets of paper in one pile, and 4 dozen in another, how many dozen in both piles?

13. One string is 4 inches long, another is 10 inches; how many inches long are both?

## LESSON XII.

### WRITTEN EXERCISES.

(71)	(72)	(73)	(74)	(75)	(76)	(77)	(78)
3412	4123	4123	1230	2132	4132	2134	2413
4324	4223	4032	4023	3142	0413	2443	4142
2134	1443	3423	4243	3041	4413	2413	0413
2041	0343	2432	0243	2414	2142	1411	3042
3412	2402	4243	2423	4421	4414	3424	4101
2132	2401	3243	4331	3414	3041	4341	3401
—	—	—	—	—	—	—	—

(79)	(80)	(81)	(82)	(83)	(84)
34124	41234	24134	41234	41341	21314
31413	32134	24413	44341	24143	44143
24130	24341	34123	24132	34124	21321
24133	43214	41244	41421	34143	40143
40241	43441	32412	34134	21414	21434
30213	14234	22141	21414	34140	24143

LESSON XIII.

Exercises in which the columns may, or may not, exceed nine.

(85)	(86)	(87)	(88)	(89)	(90)
41213	41321	41231	41234	41341	24134
40121	41321	11041	43403	40234	32413
30124	40134	41241	40343	34021	21414
13214	40132	32140	30414	34142	32413
12413	40314	44132	34243	43314	41341

(91)	(92)	(93)	(94)	(95)	(96)
34124	4041	41413	41213	41213	32142
41324	3042	21414	12142	40134	30412
14041	4014	34014	40132	41341	40414
30424	3014	40032	40141	04112	30414
40341	3414	40332	20103	30414	23301

LESSON XIV.

(97)	(98)	(99)	(100)	(101)	(102)
413412	41321	341412	31401	1	41341
321401	43210	14101	2141	41	1412
321403	40142	3041	301	371	3
413403	02132	14012	2	4142	42
240132	41304	44014	42	141	1
410321	21401	21011	4132	2	9123

## LESSON XV.

TABLE.

1 and 5 are 6.	4 and 5 are 9.	7 and 5 are 12.
2 and 5 are 7.	5 and 5 are 10.	8 and 5 are 13.
3 and 5 are 8.	6 and 5 are 11.	9 and 5 are 14.

*Table Exercise.*

10 + 5 = ?	11 + 5 = ?	12 + 5 = ?	13 + 5 = ?	14 + 5 = ?	<i>etc.</i>
20 + 5 = ?	21 + 5 = ?	22 + 5 = ?	23 + 5 = ?	24 + 5 = ?	<i>etc.</i>
30 + 5 = ?	31 + 5 = ?	32 + 5 = ?	33 + 5 = ?	34 + 5 = ?	<i>etc.</i>
40 + 5 = ?	41 + 5 = ?	42 + 5 = ?	43 + 5 = ?	44 + 5 = ?	<i>etc.</i>
50 + 5 = ?	51 + 5 = ?	52 + 5 = ?	53 + 5 = ?	54 + 5 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

					(3)	(4)	(5)	(6)	(7)	(8)
		(1)			5	5	5	5	5	5
9	1	0	2	8	5	5	5	5	5	4
5	5	5	5	5	5	5	5	5	5	5
—	—	—	—	—	5	5	5	5	5	1
					5	5	5	5	5	2
		(2)			5	5	5	5	5	5
3	7	4	6	5	5	5	5	5	5	1
5	5	5	5	5	5	5	5	5	5	2
—	—	—	—	—	5	1	2	3	4	3

NOTE.—For method of recitation, see similar preceding exercises

## LESSON XVI.

## MENTAL EXERCISES.

1. Susan paid five cents for thread, and 5 cents for needles; how many cents did she pay for both?
2. Julia has six little books, and Jane has five; how many have both?
3. Ella had ten cents, and her mother gave her five more; how many had she in all?

4. Henry has five rabbits in one cage, and 7 in another; how many rabbits has he in all?

5. A traveler inquiring the distance to a hotel, is told that it is eight miles to the first house, and five miles from the house to the hotel; how far is he from the hotel?

6. John went fishing: the first day he caught 8 perch, the next day he caught 5 trout; how many fish did he catch during both days?

7. In the battle of Waterloo, a party of soldiers captured 5 cavalry-men at one time, and, shortly after, nine more; how many did they capture in all?

8. During a battle, a squad of soldiers was ordered to fire upon the enemy; 9 discharged their pieces, but the remaining 5 disobeyed the order: how many men were there in the squad?

9. If a wheel turns round 5 times in one minute, and 3 times the next minute, how many times does it turn round in the two minutes?

10. If the gold coin called a half-eagle is worth 5 dollars, and the eagle is worth ten dollars, what are both worth?

11. If I shoot 5 pigeons on one day, and 10 the next, how many do I shoot on both days?

12. If I walk 11 miles to-day, and 5 miles to-morrow, how many miles do I walk on both days?

13. If you carry 12 eggs in one basket, and 5 in another, how many do you carry in both?

14. A California gold-digger obtained 9 ounces of gold from one hole, and five from another; how many did he obtain from both?

15. A little boy earned 5 cents at one time, and 13 cents at another ; how many did he earn in all ?

## LESSON XVII.

## WRITTEN EXERCISES.

\* Exercises in which the columns may or may not exceed twenty.

(103)	(104)	(105)	(106)	(107)	(108)	(109)
4134	41304	3214	4132	3524	41324	3120
4015	50152	4021	4132	5104	14132	4152
3052	55013	4541	1443	3052	40413	5204
4501	25214	4504	0545	4151	24104	3052
2152	35241	0404	4052	3521	34114	4414
1534	32141	3041	3052	4134	04051	3240
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(110)	(111)	(112)	(113)	(114)	(115)	(116)
3214	3412	31241	4134	3512	52134	4132
5105	4152	45123	2414	3452	25152	4015
3042	5214	40132	3424	4035	15354	5041
4132	3241	40134	3541	4324	34345	4541
4014	4045	44132	2413	4053	53050	3045
3214	2041	40412	2414	5035	44014	3524
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XVIII.

(117)	(118)	(119)	(120)	(121)	(122)	(123)
4512	4103	4132	4132	4132	4132	3524
3040	3042	2412	4132	4213	5245	3513
2453	4013	4521	4104	2441	3524	2413
2050	2413	4525	2043	5253	3514	2414
4305	0404	4525	2412	3525	4032	3243
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\* NOTE FOR THE TEACHER.—The teacher should take occasion to explain to the pupil the method of carrying when the columns exceed nineteen.

LESSON XIX.

TABLE.

1 and 6 are 7.	4 and 6 are 10.	7 and 6 are 13.
2 and 6 are 8.	5 and 6 are 11.	8 and 6 are 14.
3 and 6 are 9.	6 and 6 are 12.	9 and 6 are 15.

Table Exercise.

10 + 6 = ?	11 + 6 = ?	12 + 6 = ?	13 + 6 = ?	14 + 6 = ? etc.
20 + 6 = ?	21 + 6 = ?	22 + 6 = ?	23 + 6 = ?	24 + 6 = ? etc.
30 + 6 = ?	31 + 6 = ?	32 + 6 = ?	33 + 6 = ?	34 + 6 = ? etc.
40 + 6 = ?	41 + 6 = ?	42 + 6 = ?	43 + 6 = ?	44 + 6 = ? etc.
50 + 6 = ?	51 + 6 = ?	52 + 6 = ?	53 + 6 = ?	54 + 6 = ? etc.
etc.	etc.	etc.	etc.	etc.

BLACKBOARD EXERCISES.

					(3)	(4)	(5)	(6)	(7)	(8)	(9)
		(1)			$\frac{2}{2}$	$\frac{2}{2}$	$\frac{2}{2}$	$\frac{2}{2}$	$\frac{2}{2}$	$\frac{2}{2}$	$\frac{2}{2}$
1	5	2	4	3	6	6	6	6	6	6	6
6	6	6	6	6	6	6	6	6	6	6	5
—	—	—	—	—	6	6	6	6	6	6	4
					6	6	6	6	6	6	3
		(2)			6	6	6	6	6	6	1
8	9	6	0	7	6	6	6	6	6	6	4
6	6	6	6	6	6	1	2	3	4	5	3
—	—	—	—	—	—	—	—	—	—	—	—

NOTE.—See similar preceding exercises.

LESSON XX.

MENTAL EXERCISES.

1. Julius has six melons, and his brother has six; how many have both?

2. Charlotte has 9 roses on one bush, and 6 on another; how many roses has she in all?

3. Mary ate 3 peaches before dinner, and six after dinner; how many did she eat in all?

4. If I buy 6 books for 12 cents, and 2 books for 6 cents, how much will they all cost?

5. Joseph bought 15 marbles for 9 cents, and 8 marbles for 6 cents; how much did his marbles cost him?

6. In a certain orchard there are six pear-trees and 8 apple-trees; how many trees in the orchard?

7. A sportsman shot 6 ducks on Monday, and 11 on Wednesday; how many did he shoot on both days?

8. He used on Monday 2 pounds of duck-shot, and on Wednesday 5 pounds; how many pounds did he use in all?

9. The 5 pounds of shot cost him 6 shillings, and the 2 pounds were given him; how much did the shot cost him?

10. If you pay 9 cents for some sewing-silk, and ten cents for some tape, how many cents do you pay for both?

11. If you buy six cakes of one man, and eleven of another, how many cakes do you buy of both?

12. There are 6 apples on one tree, and 19 on another; how many on both?

13. On one shelf there are 6 books, on another 7; how many on both?

14. Susan received from her mother 6 cents at Thanksgiving, and 11 cents at Christmas; how many cents did she receive in all?

15. Edna's book has 8 pictures, and Eudora's has 6; how many pictures have both books?

16. John has been punished 6 times at school, and 8 times at home; how many times has he been punished in all?



LESSON XXI.

WRITTEN EXERCISES.

(124)	(125)	(126)	(127)	(128)	(129)
13412	41324	41321	51321	32132	51324
46712	62132	35326	41324	46213	42676
35273	41653	45624	41324	24132	25014
24134	25625	52334	50604	36213	30629
45652	32134	41302	60621	41621	46532
35213	43253	10343	40132	41321	42624

(130)	(131)	(132)	(133)	(134)	(135)
43562	34160	30123	32141	41324	41032
41324	45602	40621	32460	104	41011
63260	45032	30423	1403	3	10
41306	60324	40162	210	4107	2
40160	40432	30152	12	06	6721
24143	40162	15216	30	2	3

LESSON XXII.

(136)	(137)	(138)	(139)	(140)	(141)
41324	41324	41321	32592	41324	41321
34120	16213	62162	31416	30143	41032
60462	40123	42342	20413	62143	40162
30621	30623	62103	40162	40132	32162
41032	43216	66552	41324	40110	41314
41621	21432	45625	51602	62162	62132

(142)	(143)	(144)	(145)	(146)	(147)
13241	41322	41326	41332	13141	35213
32162	46213	45324	46213	32625	41321
46213	41362	35621	34213	32413	32319
41023	65215	51212	34320	65252	20130
54136	41352	34162	62133	35324	46050
21036	24162	30130	14120	34521	40650

## LESSON XXIII.

TABLE.

1 and 7 are 8.	4 and 7 are 11.	7 and 7 are 14.
2 and 7 are 9.	5 and 7 are 12.	8 and 7 are 15.
3 and 7 are 10.	6 and 7 are 13.	9 and 7 are 16.

Table Exercise.

10 + 7 = ?	11 + 7 = ?	12 + 7 = ?	13 + 7 = ?	14 + 7 = ? etc
20 + 7 = ?	21 + 7 = ?	22 + 7 = ?	23 + 7 = ?	24 + 7 = ? etc
30 + 7 = ?	31 + 7 = ?	32 + 7 = ?	33 + 7 = ?	34 + 7 = ? etc.
40 + 7 = ?	41 + 7 = ?	42 + 7 = ?	43 + 7 = ?	44 + 7 = ? etc.
50 + 7 = ?	51 + 7 = ?	52 + 7 = ?	53 + 7 = ?	54 + 7 = ? etc.
etc.	etc.	etc.	etc.	etc.

## BLACKBOARD EXERCISES.

					(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		(1)			7	7	7	7	7	7	7	7
0	1	7	2	4	7	7	7	7	7	7	7	7
7	7	7	7	7	7	7	7	7	7	7	7	2
-	-	-	-	-	7	7	7	7	7	7	7	7
					7	7	7	7	7	7	7	3
		(2)			7	7	7	7	7	7	7	2
3	6	5	9	8	7	7	7	7	7	7	7	3
7	7	7	7	7	7	7	7	7	7	7	7	2
-	-	-	-	-	7	1	2	3	4	5	6	1
					—	—	—	—	—	—	—	—

## LESSON XXIV.

## MENTAL EXERCISES.

1. Olive gave 7 cents for a slate, and 3 cents for a pencil; how much did she give for both?

2. Melissa bought an orange for 4 cents, and some plums for 7 cents; how many cents did she give for both?

3. Jane gave 7 cents for tape, and 10 cents for needles; how many cents did she give for both?

4. Samuel bought some wafers for 7 cents, and some steel pens for 11 cents; how many cents did both cost him?

5. Alexander bought a slate for 12 cents, and a sponge for 7 cents; how much did he give for both?

6. Mary paid 7 cents for some muslin, and nine cents for some gingham; what did she pay for both?

7. James earned by picking cherries, 7 cents the first day, and 11 cents the next day; how much did he earn in both days?

8. What must I pay for having two errands done, if I give 7 cents for the first, and 9 cents for the second?

9. Kate had a bouquet of 7 roses, and Mary one of 11 roses; how many roses in both bouquets?

10. It rained eleven times one month, and 7 times the next; how many times did it rain during the two months?

11. Six boys and 7 girls were picking berries in a pasture; how many children were there in all?

## LESSON XXV.

## WRITTEN EXERCISES.

(148)	(149)	(150)	(151)	(152)	(153)
34106	37103	41321	34132	4132	37012
70132	60123	60723	40621	7642	37012
10716	70172	40162	70162	7017	16021
41307	40130	037	43216	3712	30412
62132	62532	4013	21701	6072	52352
41621	41670	41	30721	4170	62132

(154)	(155)	(156)	(157)	(158)	(159)
5232	41321	32134	413212	3121	37124
4013	60213	22343	413216	4137	34135
6217	41602	40262	413210	5702	25312
3017	41321	32163	465271	3562	40352
1472	42321	41323	617172	5213	70712
1213	41621	41621	312711	4134	34372
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## LESSON XXVI.

(160)	(161)	(162)	(163)	(164)	(165)
52132	41324	13416	3	71344	14137
41306	32162	2134	4	34121	14216
32732	40216	413	682	36214	18214
41362	15723	24	4137	56772	32724
41321	41321	1	14	46132	34162
34162	01321	6712	31	41613	13713
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166. A boy spent 463 cents for a coat, and 1149 cents for a pair of pants and boots; how much did he spend for all?

167. A. T. Stewart paid 93680 dollars for a store, and 118210 dollars for goods; what did both cost him?

168. In a barrel there are 519 apples; in a box there are 1477 apples; how many in both?

169. There are 710 nuts in one pile, in a second there are 1555 more than in the first; how many nuts in the second pile?

170. A boy had 137 cents in his pocket; his father gave him 85 cents more; how many had he then?

171. Samuel had 1964 cents in a savings bank; he afterward put in 1176 more; how much had he then in the bank?

LESSON XXVII.

TABLE.

1 and 8 are 9.	4 and 8 are 12.	7 and 8 are 15.
2 and 8 are 10.	5 and 8 are 13.	8 and 8 are 16.
3 and 8 are 11.	6 and 8 are 14.	9 and 8 are 17.

Table Exercise.

10 + 8 = ?	11 + 8 = ?	12 + 8 = ?	13 + 8 = ?	14 + 8 = ? etc.
20 + 8 = ?	21 + 8 = ?	22 + 8 = ?	23 + 8 = ?	24 + 8 = ? etc.
30 + 8 = ?	31 + 8 = ?	32 + 8 = ?	33 + 8 = ?	34 + 8 = ? etc.
40 + 8 = ?	41 + 8 = ?	42 + 8 = ?	43 + 8 = ?	44 + 8 = ? etc.
50 + 8 = ?	51 + 8 = ?	52 + 8 = ?	53 + 8 = ?	54 + 8 = ? etc.
etc.	etc.	etc.	etc.	etc.

BLACKBOARD EXERCISES.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	8	8	8	8	8	8	8	8	8	8	8
1	8	8	8	8	8	8	8	8	8	8	8
8	8	8	8	8	8	8	8	8	8	8	8
-	-	-	-	-	-	-	-	-	-	-	-
	8	8	8	8	8	8	8	8	8	8	8
	8	8	8	8	8	8	8	8	8	8	8
6	3	0	5	4	8	8	8	8	8	8	8
8	8	8	8	8	8	8	8	8	8	8	8
-	-	-	-	-	8	1	2	3	4	5	6

LESSON XXVIII.

MENTAL EXERCISES.

1. If you place 8 books in one pile, and 8 in another, how many books will there be in both piles?
2. There are 8 roses in blossom on one bush, and ten on another; how many on both?
3. There are eight pinks in blossom from one root, and 9 from another; how many from both roots?
4. There are 8 birds'-nests in one grove, and eight in another; how many nests in both groves?

5. If I buy 2 barrels of flour for 8 dollars, and 1 barrel of sugar for 12 dollars, how much will my bill amount to?

6. I bought 3 straw hats of one man for 2 dollars, and 8 of another for eight dollars; how much did my hats cost me?

7. There are five huts in one row, and eight in another; how many huts in both rows?

8. How many are 14 and six? 24 and 6? 34 and 6? 44 and 6? 54 and 6? 64 and 6? 74 and 6? 84 and 6? 94 and 6? How many are 3 and 8? 13 and 8? 23 and 8? 33 and 8? 43 and 8? 53 and 8? 63 and 8? 73 and 8? 83 and 8? 93 and 8?

9. Count from 100 to 10; thus, 100, 90, 80, 70, &c.

10. Count from 20 to 1; thus, 20, 19, 18, 17, 16, &c.

LESSON XXIX.  
WRITTEN EXERCISES.

(172)	(173)	(174)	(175)	(176)	(177)
818764	41342	21341	41832	41372	41783
413721	48324	62437	41672	47726	47867
340272	78772	24167	32171	68783	87716
187642	46724	82416	42313	27167	37872
312413	37862	37137	57717	27178	47132
613752	41371	41683	87671	37183	41367

(178)	(179)	(180)	(181)	(182)	(183)
41371	641371	413721	81713	4132	41320
21341	407872	671342	41871	8718	71073
31241	868372	413721	24168	3416	04871
67123	413783	671832	37087	8767	67871
47201	413782	878303	89168	4787	70783
78788	487213	417832	37168	4607	83782

## LESSON XXX.

(184)	(185)	(186)	(187)	(188)	(189)
41340	41837	41372	41672	41834	41837
21347	68773	46837	37183	67832	41678
76827	41701	46713	63784	41786	38678
48372	37456	48783	32487	67138	32168
48372	75671	67187	67137	41687	41767
41671	38716	38147	47183	48371	89168

(190)	(191)	(192)	(193)	(194)	(195)
41071	13716	41371	41372	71324	41674
60872	41372	62710	48637	67168	34187
41876	67187	04701	24873	32417	62184
86716	47183	37124	21437	63418	67132
40713	86713	37672	67138	46728	48667
87241	46713	48372	63418	87832	47183

## LESSON XXXI.

(196)	(197)	(198)	(199)	(200)	(201)
67123	41374	41371	41372	3467	41314
41670	21367	21413	41672	4137	67183
37087	41321	61783	40132	6718	28372
86707	61713	87167	67104	7876	67027

(202)	(203)	(204)	(205)	(206)	(207)	(208)	(209)
413	413	613	312	4167	4137	312	456
671	271	714	417	8723	6123	417	471
387	687	834	807	7167	4167	686	657
216	348	318	603	4168	4137	607	456
417	483	772	477	3718	6718	807	432
317	876	837	288	6167	3712	711	467
213	417	617	678	4137	6137	707	338
621	412	416	372	6874	2162	160	786

## LESSON XXXII.

TABLE.

1 and 9 are 10.	4 and 9 are 13.	7 and 9 are 16.
2 and 9 are 11.	5 and 9 are 14.	8 and 9 are 17.
3 and 9 are 12.	6 and 9 are 15.	9 and 9 are 18.

*Table Exercise.*

10 + 9 = ?	11 + 9 = ?	12 + 9 = ?	13 + 9 = ?	14 + 9 = ?	<i>etc.</i>
20 + 9 = ?	21 + 9 = ?	22 + 9 = ?	23 + 9 = ?	24 + 9 = ?	<i>etc.</i>
30 + 9 = ?	31 + 9 = ?	32 + 9 = ?	33 + 9 = ?	34 + 9 = ?	<i>etc.</i>
40 + 9 = ?	41 + 9 = ?	42 + 9 = ?	43 + 9 = ?	44 + 9 = ?	<i>etc.</i>
50 + 9 = ?	51 + 9 = ?	52 + 9 = ?	53 + 9 = ?	54 + 9 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

		(1)			(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
					9	9	9	9	9	9	9	9	9	9
1	9	2	8	4	9	9	9	9	9	9	9	9	9	9
9	9	9	9	9	9	9	9	9	9	9	9	9	9	3
-	-	-	-	-	9	9	9	9	9	9	9	9	9	7
					9	9	9	9	9	9	9	9	9	2
		(2)			9	9	9	9	9	9	9	9	9	3
7	3	0	6	5	9	9	9	9	9	9	9	9	9	6
9	9	9	9	9	9	9	9	9	9	9	9	9	9	4
-	-	-	-	-	9	1	2	3	4	5	6	7	8	5

## LESSON XXXIII.

## MENTAL EXERCISES.

1. It cost 9 dollars to get my sleigh repaired, and 8 dollars to buy a new harness; how much did I spend?

2. Charles saw 9 ducks in one flock, and 11 in another; how many ducks did he see in all?

3. Julius gathered 10 quarts of chestnuts in one day, and his brother gathered 9; how many quarts did both gather?



4. There are 9 pigeons in one flock, and 6 in another ; how many pigeons in both flocks ?

5. There are 4 workmen in one shop, and 7 in another ; how many workmen in both ?

6. If a farmer has 9 cows in a field, and puts in 7 more, how many will he then have in the field ?

7. There are 3 rabbits in the cage, and 5 in the garden ; how many are there in all ?

8. If Charles has two notes due him, one for 7 dollars, and the other for 8 dollars, how much is due him in all ?

9. James has 8 sheep and 2 lambs ; how many has he of both ?

LESSON XXXIV.

WRITTEN EXERCISES.

(210)	(211)	(212)	(213)	(214)	(215)
41372	96876	91876	61783	41978	4786
60241	41878	49837	91876	39838	4983
78978	37418	49183	41983	78768	9778
64138	67183	49703	87678	71867	6718

(216)	(217)	(218)	(219)	(220)	(221)
41372	34187	3876	98712	41837	41873
91671	86783	4137	64134	68321	41678
48783	91671	9413	37867	41671	98783
91678	49871	7681	91837	89672	24167

(222)	(223)	(224)	(225)	(226)	(227)
37164	41672	41983	91876	83716	41839
18716	48786	87683	41983	49896	67187
91876	97898	91787	71867	49837	91837
80713	39876	64183	41919	89168	86784

## LESSON XXXV.

228. 1203 apples are worth 957 cents, 530 oranges are worth 1709 cents; how much are both worth?

229. 57 bushels of potatoes are worth 120 dollars, and some beets are worth 118 dollars, what are both worth?

230. There are three barrels of potatoes, the first is worth 320 cents, the second 287 cents, and the third worth 795 cents; what is the value of all?

231. A box contains 137 oranges and a barrel contains 85 more than the box; how many oranges in the barrel?

232. A boy placed 56 nuts in a pile; how many nuts in four such piles?

233. How much are 4 horses worth if each horse is worth 400 dollars?

234. 1340 arithmetics cost 18680 cents; 1470 slates cost 6461 cents; what is the cost of both?

235. Eighty bushels of wheat cost 160 dollars and 100 bushels of rye cost sixty-seven dollars more than the wheat; what did the rye cost?

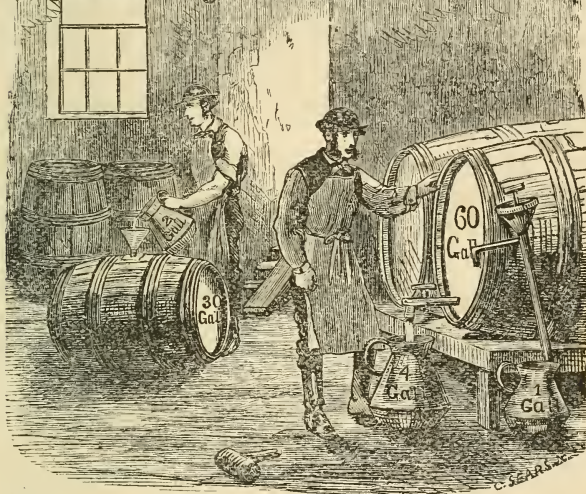
236. There are two carts in the street, one contains 130 quarts of corn, and the other 179 quarts of potatoes; how many quarts in both?

237. There are 53 boys in a class; if one boy has 23 cents and another boy seven cents, how many cents have both boys?

238. John has 230 marbles, Marvin has 75 more than John; how many marbles has Marvin?

239. Susan had 1460 pins, and she bought 2464 pins more; how many pins had she in all?

# SUBTRACTION



## SECTION III.

### LESSON I.

1. If I take 2 gallons of oil from 4 gallons, how much will remain ?

FORMULA.—If from 4 gallons I take 2 gallons, there will remain the difference between 4 gallons and 2 gallons, which is 2 gallons ; therefore there will be 2 gallons left.

2. If John has three marbles, and lose one, how many has he then ?

3. Edwin recited 4 lessons, but one of them was imperfect; how many perfect lessons did he recite?

4. Susan was bringing home 6 cakes, but she gave one to a poor boy; how many did she bring home?

5. There were 8 clothes-pins in the basket, and Jane fastened one on the line; how many remained in the basket?

6. A dröver bought 9 sheep, and sold one; how many remained unsold?

7. A boy bought 7 marbles, but lost one; how many had he left?

8. Charles bought 8 peaches, and gave one away; how many had he left?

9. Ella had 5 pins on a paper, she gave one to Julia; how many had she left?

10. Lelia had 10 peaches given her by her uncle, she gave her mother one; how many had she left?

11. A boy gave a ten-cent-piece to pay for a stick of candy that cost one cent; how much change did he receive?

12. There were 7 potatoes on the dish at dinner; Mary took one; how many remained?

13. Charles caught 5 squirrels, but one escaped; how many had he left?

14. Henry caught 9 nice fish, but the largest escaped into the water; how many had he to take home?

15. Joseph bought a melon, but on going home a larger boy took it away from him; how many had he when he arrived home?

## LESSON III.

## \*WRITTEN EXERCISES,

In which each figure of the Minuend is equal to or larger than the corresponding figure of the Subtrahend.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
7689	3712	4134	3412	4167	1021	3417	1216
1111	1111	1111	1111	1111	1011	1111	1111
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
4167	3708	4167	4183	4134	6712	4137	4186
1111	1101	1111	1011	1111	1011	1111	1011
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
8718	6891	3718	6975	4987	6913	4187	6213
1111	1011	1001	1111	2101	1011	1011	1111
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON IV.

(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)
9187	6413	9187	6542	4187	6834	7173	6712
1111	1001	1111	1111	1111	1111	0110	1111
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
(33)	(34)	(35)	(36)	(37)	(38)	(39)	(40)
9837	8674	4187	8916	7834	9176	4137	2141
1101	1101	1111	1011	1011	1101	1111	1111
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
(41)	(42)	(43)	(44)	(45)	(46)	(47)	(48)
1876	4137	8916	4183	7684	3416	8913	2186
1111	1011	1101	1111	1111	1011	1011	1110

\* NOTE FOR THE TEACHER.—The teacher may instruct the pupil in the method of subtracting, and of definitions, &c., as fully as he may deem expedient. This, probably, can best be done by oral instruction. The author's object is to aid the teacher, by giving systematically graded examples for practice.

## LESSON V.

TABLE.

1	from	1	leaves	0.	2	from	2	leaves	0.
1	from	2	leaves	1.	2	from	3	leaves	1.
1	from	3	leaves	2.	2	from	4	leaves	2.
1	from	4	leaves	3.	2	from	5	leaves	3.
1	from	5	leaves	4.	2	from	6	leaves	4.
1	from	6	leaves	5.	2	from	7	leaves	5.
1	from	7	leaves	6.	2	from	8	leaves	6.
1	from	8	leaves	7.	2	from	9	leaves	7.
1	from	9	leaves	8.	2	from	10	leaves	8.
1	from	10	leaves	9.	2	from	11	leaves	9.

## BLACKBOARD EXERCISES.

(1)

11	10	2	9	3	8	4	7	5	6
2	2	2	2	2	2	2	2	2	2
—	—	—	—	—	—	—	—	—	—

(2)

11	18	19	20	12	17	13	16	14	15
2	2	2	2	2	2	2	2	2	2
—	—	—	—	—	—	—	—	—	—

(3)

21	27	28	22	26	23	29	25	24	30
2	2	2	2	2	2	2	2	2	2
—	—	—	—	—	—	—	—	—	—

NOTE.—These exercises are to be recited in the same manner as similar exercises preceding.

## LESSON VI.

## MENTAL EXERCISES.

1. A boy had 3 marbles in his pocket, but two dropped out through a hole ; how many marbles had he left? .

SOLUTION.—The solution is the same as in Lesson II.

2. Charles bought 5 pencils, and lost 2 ; how many had he left?

3. Ada found 6 cents, but afterwards lost 2 of them; how many had she remaining?

4. Annette bought a book for 8 cents, and gave the clerk a ten-cent piece; how much change should she receive?

5. There were 9 robins stealing cherries; John shot 2, the rest flew away; how many were unhurt?

6. Eight boys started to ride down a hill on a sled, but 2 fell off; how many were on the sled at the bottom of the hill?

7. From a rake that had 4 teeth, Charles broke out two; how many were left?

8. A lad in climbing a steep bank, gained 5 yards and fell back 2 yards each minute; how many yards did he gain each minute?

9. There were 8 persons in a railroad car; two got out; how many remained?

10. Sarah has 7 pins, and Julia has 2; how many more pins has Sarah than Julia?

11. John caught 9 fish, Henry caught 2; how many fish did John catch more than Henry?

12. If, of 7 lights in a street, two are blown out, how many will be left burning?

13. Harry recited 11 lessons, Julius 2; how many more lessons did Harry recite than Julius?

14. A man drove 9 horses to market, and sold 2; how many were unsold?

15. A poor boy bought 4 boxes of matches, but could only sell 2; how many boxes remained unsold?

## LESSON VII.

## WRITTEN EXERCISES.

(49)	(50)	(51)	(52)	(53)	(54)	(55)
87186	41868	3784	9168	34186	41872	4167
11011	11101	1101	1012	12102	21021	1021
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(56)	(57)	(58)	(59)	(60)	(61)	(62)
67134	4167	4186	4108	71864	37188	4123
11012	2122	2102	2102	21221	12122	2122
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(63)	(64)	(65)	(66)	(67)	(68)	(69)
9187	6413	9871	4167	8768	31214	416758
1102	2210	2020	1222	2121	21214	412222
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON VIII.

(70)	(71)	(72)	(73)	(74)	(75)
41674	87162	98374	16783	91246	91234
11222	22121	12212	10221	21211	21211
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(76)	(77)	(78)	(79)	(80)	(81)
41674	37412	67123	41374	21672	41876
10111	12202	32122	20232	21321	20301
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(82)	(83)	(84)	(85)	(86)	(87)
41262	41324	36241	41372	41372	41372
21221	21211	22121	21221	21221	21222
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>



## LESSON IX.

## TABLE.\*

3 from 4 leaves 1.	3 from 7 leaves 4.	3 from 10 leaves 7.
3 from 5 leaves 2.	3 from 8 leaves 5.	3 from 11 leaves 8.
3 from 6 leaves 3.	3 from 9 leaves 6.	3 from 12 leaves 9.

*Table Exercise.*

10 + 3 = ?	11 + 3 = ?	12 + 3 = ?	13 + 3 = ?	14 + 3 = ?	<i>etc.</i>
10 - 3 = ?	11 - 3 = ?	12 - 3 = ?	13 - 3 = ?	14 - 3 = ?	<i>etc.</i>
20 + 3 = ?	21 + 3 = ?	22 + 3 = ?	23 + 3 = ?	24 + 3 = ?	<i>etc.</i>
20 - 3 = ?	21 - 3 = ?	22 - 3 = ?	23 - 3 = ?	24 - 3 = ?	<i>etc.</i>
30 + 3 = ?	31 + 3 = ?	32 + 3 = ?	33 + 3 = ?	34 + 3 = ?	<i>etc.</i>
30 - 3 = ?	31 - 3 = ?	32 - 3 = ?	33 - 3 = ?	34 - 3 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

3	11	4	10	5	9	6	7	8	12
3	3	3	3	3	3	3	3	3	3
—	—	—	—	—	—	—	—	—	—

(2)

13	19	14	18	15	20	16	21	17	22
3	3	3	3	3	3	3	3	3	3
—	—	—	—	—	—	—	—	—	—

(3)

23	30	32	24	31	29	25	27	26	28
3	3	3	3	3	3	3	3	3	3
—	—	—	—	—	—	—	—	—	—

## LESSON X.

## MENTAL EXERCISES.

1. If you buy 4 cakes for your lunch, and on your way to school lose 3, how many will you have left?
2. If you buy 5 slate-pencils, and you lose 3, how many will you have left?

\* NOTE FOR THE TEACHER —The teacher should not neglect to question the pupils thoroughly and repeatedly on the table

3. Samuel placed 7 peaches on the table for his mother, but his brother took away 3; how many were left?

4. There were 9 apples on the table, and Mary hid 3 of them; how many remained?

5. There were 11 pears on a plate, and Horace ate 3 of them; how many were left?

6. If you cut off 3 feet from a string 13 feet long, how much will be left?

7. A boy bought a large kite for 12 cents, and then sold it for 3 cents less than he gave for it; how much did he receive for it?

8. John bought a book for 15 cents, and sold it for 3 cents less than he gave for it; for how much did he sell it?

9. I bought a pig for 9 dollars, and sold it for 3 dollars less than I gave for it; how much did I receive for it?

10. There were 11 cows in the pasture, and a boy drove out 3; how many remained?

11. A drover had 19 horses, and sold all except 3; how many did he sell?

12. A boy had 17 marbles, but in playing he lost all but 3; how many marbles did he lose?

13. Henry caught 5 fishes, and the cat stole 3; how many had he left?

14. Charles picked 7 bushels of pears, and George picked as many lacking 3; how many did George pick?

15. Thomas owns 13 sheep, his brother James has as many lacking 3; how many has James?

LESSON XI.  
WRITTEN EXERCISES.

(88)	(89)	(90)	(91)	(92)	(93)
418764	41374	86712	91876	41034	68712
113232	31232	33212	31213	21032	32112
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(94)	(95)	(96)	(97)	(98)	(99)
91871	6713	98712	61713	98173	67121
20331	3213	33311	30303	32032	31121
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(100)	(101)	(102)	(103)	(104)	(105)
41876	38789	64187	918764	187137	69123
31023	13321	33123	312311	123013	32122
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XII.

(106)	(107)	(108)	(109)	(110)	(111)
418764	13912	67134	67183	91276	41876
213321	13311	32132	21033	21230	31232
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(112)	(113)	(114)	(115)	(116)	(117)
41876	41837	68346	41264	43418	67134
20321	31231	32311	31232	33213	31132
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(118)	(119)	(120)	(121)	(122)	(123)
43786	41873	91674	87183	69134	87186
22342	21323	31233	23132	33132	32132
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XII.

## TABLE.

4 from 5 leaves 1.	4 from 8 leaves 4.	4 from 11 leaves 7.
4 from 6 leaves 2.	4 from 9 leaves 5.	4 from 12 leaves 8.
4 from 7 leaves 3.	4 from 10 leaves 6.	4 from 13 leaves 9.

*Table Exercise.*

10 + 4 = ?	11 + 4 = ?	12 + 4 = ?	13 + 4 = ?	14 + 4 = ?	<i>etc.</i>
10 - 4 = ?	11 - 4 = ?	12 - 4 = ?	13 - 4 = ?	14 - 4 = ?	<i>etc.</i>
20 + 4 = ?	21 + 4 = ?	22 + 4 = ?	23 + 4 = ?	24 + 4 = ?	<i>etc.</i>
20 - 4 = ?	21 - 4 = ?	22 - 4 = ?	23 - 4 = ?	24 - 4 = ?	<i>etc.</i>
30 + 4 = ?	31 + 4 = ?	32 + 4 = ?	33 + 4 = ?	34 + 4 = ?	<i>etc.</i>
30 - 4 = ?	31 - 4 = ?	32 - 4 = ?	33 - 4 = ?	34 - 4 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES

(1)

4	5	11	6	12	10	7	9	8	13
4	4	4	4	4	4	4	4	4	4
—	—	—	—	—	—	—	—	—	—

(2)

14	22	16	15	17	23	21	18	20	19
4	4	4	4	4	4	4	4	4	4
—	—	—	—	—	—	—	—	—	—

(3)

24	33	25	32	26	31	27	30	28	29
4	4	4	4	4	4	4	4	4	4
—	—	—	—	—	—	—	—	—	—

## LESSON XIV.

## MENTAL EXERCISES.

1. If you have 7 quarts of milk in a pail, and you spill 4 quarts, how many quarts remain?

2. If you play 6 games of ball, and are beaten in 4 games, in how many games are you not beaten?

3. There are 11 lines to be written in your writing-book; you have written all but 4; how many lines have you written?

4. A beggar-man had 8 cents given him; he spent 4 for bread; how many cents had he remaining?

5. There are 7 days in a week, and if you are sick 4 days, how many days are you well?

6. Nora had 5 new dresses in a year; she wore out 4 of them; how many had she left?

7. There are 13 bricks in one pile, and as many in a second pile lacking 4; how many bricks in the second pile?

8. There are 18 leaves in a book; if you tear out 4 of them, how many will remain?

9. John bought a little wagon for 6 dollars, and then sold it for 4 dollars; did he make, or lose, and how much?

10. A merchant bought 13 yards of silk for 15 dollars; but it being damaged, he was obliged to sell it for 4 dollars less than it cost him; how much did he receive for it?

11. A grocer bought some sugar for 7 dollars, and afterward sold it for 4 dollars; how much did he lose?

12. There are 17 sheep in one field, and as many in a second as in the first, lacking 4 sheep; how many sheep in the second field?

13. Henry is 13 years old, James is 4 years younger; how old is James?

14. Susan is 7 years old, Edna is 4; how much older is Susan than Edna?

15. Carrington solved 15 examples in Arithmetic; 4 were incorrect; how many were correct?

## LESSON XV.

## WRITTEN EXERCISES.

(124)	(125)	(126)	(127)	(128)	(129)
48786	41837	89186	41832	91876	41896
32132	41432	44141	31432	41342	41332
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(130)	(131)	(132)	(133)	(134)	(135)
86413	41876	41834	67872	44186	91876
34413	21421	21434	21432	40142	31442
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(136)	(137)	(138)	(139)	(140)	(141)
91876	41987	68341	78374	86974	98786
31343	21344	14041	32343	42434	41434
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XVI.

(142)	(143)	(144)	(145)	(146)	(147)
91876	41873	91670	49186	49187	41867
31042	31403	41430	41143	44143	41324
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(148)	(149)	(150)	(151)	(152)	(153)
91876	49187	67834	19187	67189	64183
41432	24141	03421	14144	34124	32141
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(154)	(155)	(156)	(157)	(158)	(159)
918761	41834	67183	91374	68014	91846
414101	41231	32142	41244	13014	31441
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XVII.

## TABLE.

5 from 6 leaves 1.	5 from 9 leaves 4.	5 from 12 leaves 7.
5 from 7 leaves 2.	5 from 10 leaves 5.	5 from 13 leaves 8.
5 from 8 leaves 3.	5 from 11 leaves 6.	5 from 14 leaves 9.

*Table Exercise.*

10 + 5 = ?	11 + 5 = ?	12 + 5 = ?	13 + 5 = ?	14 + 5 = ?	<i>etc.</i>
10 - 5 = ?	11 - 5 = ?	12 - 5 = ?	13 - 5 = ?	14 - 5 = ?	<i>etc.</i>
20 + 5 = ?	21 + 5 = ?	22 + 5 = ?	23 + 5 = ?	24 + 5 = ?	<i>etc.</i>
20 - 5 = ?	21 - 5 = ?	22 - 5 = ?	23 - 5 = ?	24 - 5 = ?	<i>etc.</i>
30 + 5 = ?	31 + 5 = ?	32 + 5 = ?	33 + 5 = ?	34 + 5 = ?	<i>etc.</i>
30 - 5 = ?	31 - 5 = ?	32 - 5 = ?	33 - 5 = ?	34 - 5 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

5	13	6	12	7	14	8	11	9	10
5	5	5	5	5	5	5	5	5	5
—	—	—	—	—	—	—	—	—	—

(2)

15	24	16	18	17	20	19	23	21	22
5	5	5	5	5	5	5	5	5	5
—	—	—	—	—	—	—	—	—	—

(3)

26	34	25	33	27	32	28	31	29	30
5	5	5	5	5	5	5	5	5	5
—	—	—	—	—	—	—	—	—	—

## LESSON XVIII.

## MENTAL EXERCISES.

1. There were 9 plums on the tree; Jacob knocked off 5; how many remained on the tree?

2. Susan had 11 pins in her cushion; the servant took out 5; how many remained?

3. Ellen performed 13 examples in Mental Arithmetic, Nettie performed as many lacking 5; how many did Nettie perform?

4. The teacher gave 15 questions to the class; 5 were answered correctly, and the rest incorrectly; how many were answered incorrectly?

5. There were 16 words given out to the spelling-class; 5 were misspelled; how many were spelled correctly?

6. There were 6 boys sitting on a bench; 5 have a recess; how many remain on the bench?

7. A stage travels 9 miles in one hour, the next hour it travels as many miles lacking 5; how many miles did the stage travel the last hour?

8. There were 9 persons in the stage, but 5 of them became tired and got out; how many remained in the stage?

9. 13 boys started for school, but 5 of them played truant and went off to play; how many arrived at the school?

10. George had 14 marbles when he commenced playing with James, but he lost all but 5; how many did he lose?

11. His 14 marbles cost him 9 cents, and the 5 marbles which he had left he sold for 5 cents; how many cents did his game cost him?

12. If I have 16 *quarters* of an apple, and give away 3 *quarters*, how many *quarters* will I have left?

13. If I have 17 *quarters* of a melon, and give away 5 *quarters*, how many *quarters* will I have left?

14. If I have 9 *halves* of an orange, and give away 5 *halves*, how many *halves* will I have left?



## LESSON XIX.

## \* WRITTEN EXERCISES,

In which each alternate figure of the Subtrahend is larger than the corresponding figure of the Minuend.

(160)	(161)	(162)	(163)	(164)
927381	917183	618190	519080	924390
345432	421354	234221	324121	432412

(165)	(166)	(167)	(168)	(169)
527082	816141	423453	732250	734271
232154	135212	141514	241341	241342

(170)	(171)	(172)	(173)	(174)
826041	705180	537250	527382	827191
434425	443544	243424	343424	134542

## LESSON XX.

(175)	(176)	(177)	(178)	(179)
92836171	72637051	52927341	82719143	74906181
25245452	25352325	44532524	24154225	35442325

(180)	(181)	(182)	(183)	(184)
81918141	72927162	91735141	72534272	73804171
24554434	43455345	34454223	45252354	48321334

(185)	(186)	(187)	(188)	(189)
93427391	42939081	61907282	72918051	61719273
34142453	35252134	44411424	45544123	44453454

\* NOTE FOR THE TEACHER.—Before the pupil is required to perform the following exercises, the teacher should explain the method of subtracting when the figure in the subtrahend exceeds the corresponding figure in the minuend. (See Introduction.)

## LESSON XXI.

TABLE.

6 from 7 leaves 1.	6 from 10 leaves 4.	6 from 13 leaves 7.
6 from 8 leaves 2.	6 from 11 leaves 5.	6 from 14 leaves 8.
6 from 9 leaves 3.	6 from 12 leaves 6.	6 from 15 leaves 9.

*Table Exercise.*

10 + 6 = ?	11 + 6 = ?	12 + 6 = ?	13 + 6 = ?	14 + 6 = ?	<i>etc.</i>
10 - 6 = ?	11 - 6 = ?	12 - 6 = ?	13 - 6 = ?	14 - 6 = ?	<i>etc.</i>
20 + 6 = ?	21 + 6 = ?	22 + 6 = ?	23 + 6 = ?	24 + 6 = ?	<i>etc.</i>
20 - 6 = ?	21 - 6 = ?	22 - 6 = ?	23 - 6 = ?	24 - 6 = ?	<i>etc.</i>
30 + 6 = ?	31 + 6 = ?	32 + 6 = ?	33 + 6 = ?	34 + 6 = ?	<i>etc.</i>
30 - 6 = ?	31 - 6 = ?	32 - 6 = ?	33 - 6 = ?	34 - 6 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

6	13	7	12	8	11	9	14	10	15
6	6	6	6	6	6	6	6	6	6
—	—	—	—	—	—	—	—	—	—

(2)

25	18	17	16	20	19	22	21	24	23
6	6	6	6	6	6	6	6	6	6
—	—	—	—	—	—	—	—	—	—

(3)

26	28	27	35	29	32	33	31	34	30
6	6	6	6	6	6	6	6	6	6
—	—	—	—	—	—	—	—	—	—

## LESSON XXII.

## MENTAL EXERCISES.

1. There were 7 pears on a tree ; Henry knocked off 6 ; how many remained on the tree ?

2. If you have 11 chestnuts in your pocket, and you give away 6, how many will you have left ?

3. There were 9 hop-poles standing in a row ; the wind has blown 6 of them down ; how many remain standing ?

4. 19 soldiers went into battle, but 6 of them proved towards and ran away ; how many remained ?

5. 8 ducks were brought for sale ; 6 were sold ; how many remained unsold ?

6. Out of 12 bushels of potatoes, 6 became rotten ; how many bushels remained sound ?

7. There were 19 apples on a tree, and Julius knocked 6 of them off ; how many remained ?

8. A man bought a cow for 19 dollars, and then sold her for 6 dollars less than he gave for her ; how much did he receive ?

9. A man bought 14 baskets of peaches for 12 dollars, and then sold 6 baskets for 8 dollars ; how many peaches had he left ?

10. A boy had 13 marbles in his desk ; his brother took out 6 ; how many remained ?

11. I sold a set of chairs for 16 dollars, which was 6 dollars more than they cost me ; how much did I give for them ?

12. I sold 12 sheep for 18 dollars, which was 6 dollars more than they cost me ; what did they cost ?

13. A merchant sold 9 pairs of shoes for 12 dollars, which was 6 dollars more than he gave for them ; how much did he give for them ?

## LESSON XXIII.

## WRITTEN EXERCISES.

(190)	(191)	(192)	(193)	(194)
92819171	61928271	92739192	71839171	92738292
36243254	44230424	43250423	42343512	36562634

(195)	(196)	(197)	(198)	(199)
83918141	63707210	83728195	70729570	71806491
45663432	45656301	24165216	36142631	32213652

(200)	(201)	(202)	(203)	(204)
91819180	72917371	72819073	83926171	91817182
35256251	24563453	43252134	34264213	44434643

## LESSON XXIV.

Exercises in which each figure of the Subtrahend, except the left hand figure, is larger than the corresponding one of the Minuend.

(205)	(206)	(207)	(208)	(209)
41111111	71111111	91111111	9222222	8222222
14231256	23612456	24562122	3425433	4424343

(210)	(211)	(212)	(213)	(214)
6333333	8333333	6333333	9333333	8333333
2453645	3456544	2334334	2333334	4333334

(215)	(216)	(217)	(218)	(219)
4333333	9333333	6333333	8333333	6333333
2343434	2353535	2343434	6353535	2363636

## LESSON XXV.

TABLE.

7 from 8 leaves 1.	7 from 11 leaves 4.	7 from 14 leaves 7.
7 from 9 leaves 2.	7 from 12 leaves 5.	7 from 15 leaves 8.
7 from 10 leaves 3.	7 from 13 leaves 6.	7 from 16 leaves 9.

*Table Exercise.*

10 + 7 = ?	11 + 7 = ?	12 + 7 = ?	13 + 7 = ?	14 + 7 = ?	<i>etc.</i>
10 - 7 = ?	11 - 7 = ?	12 - 7 = ?	13 - 7 = ?	14 - 7 = ?	<i>etc.</i>
20 + 7 = ?	21 + 7 = ?	22 + 7 = ?	23 + 7 = ?	24 + 7 = ?	<i>etc.</i>
20 - 7 = ?	21 - 7 = ?	22 - 7 = ?	23 - 7 = ?	24 - 7 = ?	<i>etc.</i>
30 + 7 = ?	31 + 7 = ?	32 + 7 = ?	33 + 7 = ?	34 + 7 = ?	<i>etc.</i>
30 - 7 = ?	31 - 7 = ?	32 - 7 = ?	33 - 7 = ?	34 - 7 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

8	10	9	12	11	16	17	15	14	13
7	7	7	7	7	7	7	7	7	7
—	—	—	—	—	—	—	—	—	—

(2)

17	19	18	21	20	23	22	26	25	24
7	7	7	7	7	7	7	7	7	7
—	—	—	—	—	—	—	—	—	—

(3)

27	36	28	35	29	34	30	33	31	32
7	7	7	7	7	7	7	7	7	7
—	—	—	—	—	—	—	—	—	—

## LESSON XXVI.

## MENTAL EXERCISES.

1. Charles gave 8 cents to William and 7 cents to James; how many more did he give to William than to James?

2. A man gave 10 dollars for a box of lemons, and

7 dollars for a box of oranges; how many more dollars did he give for the lemons than for the oranges?

3. A farmer brought to market twelve cheeses, and sold 7; how many remained unsold?

4. A merchant sold sugar to the amount of 11 dollars; he received 7 dollars down; how much was then due him?

5. I paid 10 dollars for some hay, and 7 dollars for some straw; how much more did I pay for the hay than for the straw?

6. A boy bought a book for 16 cents, and a slate for 7 cents; how many more cents did he pay for the book than for the slate?

7. Julia bought a geography for 25 cents, and some writing-paper for 7 cents; how much more did the geography cost than the paper?

8. If I have 10 *half-apples*, and give away 7, how many will I have left?

9. John had 13 *quarters* of an apple; he gave away 7; how many had he left?

10. There are 10 *tenths* in an apple; if I give away 7 *tenths*, how many *tenths* will remain?

11. There are 19 *nineteenths* in an apple; if 7 *nineteenths* are taken away, how many will remain?

12. There are 20 *twentieths* in a unit; if 7 *twentieths* are taken away, how many will remain?

LESSON XXVII.  
WRITTEN EXERCISES.

(220)	(221)	(222)	(223)	(224)
4444444	4444444	4444444	4444444	4444444
1484789	254749	145789	146476	144478
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(225)	(226)	(227)	(228)	(229)
555555	555555	555555	555555	555555
278589	455876	487768	387869	389788
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(230)	(231)	(232)	(233)	(234)
666666	666666	666666	666666	666666
487689	468787	398688	287868	398868
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

LESSON XXVIII.

(235)	(236)	(237)	(238)	(239)
777777	777777	777777	777777	777777
387989	486788	298788	287888	297998
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(240)	(241)	(242)	(243)	(244)
888888	888888	888888	888888	888888
189889	189899	188889	198889	189889
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(245)	(246)	(247)	(248)	(249)
1000000	1000000	1000000	1000000	1000000
999999	999999	999999	999999	999999
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XXIX.

TABLE.

8 from 9 leaves 1.	8 from 12 leaves 4.	8 from 15 leaves 7.
8 from 10 leaves 2.	8 from 13 leaves 5.	8 from 16 leaves 8.
8 from 11 leaves 3.	8 from 14 leaves 6.	8 from 17 leaves 9.

*Table Exercise.*

$10 + 8 = ?$	$11 + 8 = ?$	$12 + 8 = ?$	$13 + 8 = ?$	$14 + 8 = ?$	<i>etc.</i>
$10 - 8 = ?$	$11 - 8 = ?$	$12 - 8 = ?$	$13 - 8 = ?$	$14 - 8 = ?$	<i>etc.</i>
$20 + 8 = ?$	$21 + 8 = ?$	$22 + 8 = ?$	$23 + 8 = ?$	$24 + 8 = ?$	<i>etc.</i>
$20 - 8 = ?$	$21 - 8 = ?$	$22 - 8 = ?$	$23 - 8 = ?$	$24 - 8 = ?$	<i>etc.</i>
$30 + 8 = ?$	$31 + 8 = ?$	$32 + 8 = ?$	$33 + 8 = ?$	$34 + 8 = ?$	<i>etc.</i>
$30 - 8 = ?$	$31 - 8 = ?$	$32 - 8 = ?$	$33 - 8 = ?$	$34 - 8 = ?$	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

9	16	10	17	15	11	14	12	18	13
8	8	8	8	8	8	8	8	8	8
—	—	—	—	—	—	—	—	—	—

(2)

19	27	20	26	21	25	22	24	23	28
8	8	8	8	8	8	8	8	8	8
—	—	—	—	—	—	—	—	—	—

(3)

29	37	30	36	31	35	34	33	38	32
8	8	8	8	8	8	8	8	8	8
—	—	—	—	—	—	—	—	—	—

## LESSON XXX.

## MENTAL EXERCISES.

1 There were 18 bean-poles in a row, and the wind blew down 8; how many remained standing?

2. 15 boys were at play; a shower came up, and only 8 of them could get under shelter; how many got wet?

3. Mary had 16 roses on her rose-bush; Julia plucked 8 for a bouquet; how many remained on the bush?



4. James paid 19 cents for the use of a wheelbarrow, and 8 cents for the use of a spade; how much more did he pay for the use of the wheelbarrow than for the use of the spade.

5. There are 18 girls in one class and eight in another; how many more girls in one class than in the other?

6. James put 20 cents into the contribution box, John put in 8; how many more did James put in than John?

7. If a man walked 23 miles the first day, and 8 miles the second day, how many more miles did he walk on the first day than on the second?

8. There were 25 hats in a row, in the entry; 8 of them are taken away; how many remain?

9. Susan paid 22 cents for some muslin, and 8 cents for some gingham; how much more did the muslin cost than the gingham?

10. Eight boys and 17 girls were picking berries in a pasture; how many more girls than boys were there?

## LESSON XXXI.

## WRITTEN EXERCISES.

Exercises in which each figure in the Subtrahend may or may not be larger than the corresponding figure in the Minuend.

(250)	(251)	(252)	(253)	(254)
418786	918746	918764	37842	671834
126873	198714	168194	28468	103178
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(255)	(256)	(257)	(258)	(259)
671837	418637	489683	916718	378724
287138	329672	341871	241803	160783
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## SUBTRACTION.

(260)	(261)	(262)	(263)	(264)
418708	390641	983418	678371	918642
387180	218901	371862	248713	167184
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XXXII.

(265)	(266)	(267)	(268)	(269)
371864	918374	691371	8964137	418624
214687	131989	113076	1178193	146193
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(270)	(271)	(272)	(273)	(274)
341864	317834	671834	918641	378642
143876	219873	142689	173868	119873
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(275)	(276)	(277)	(278)	(279)
418637	418637	896834	918371	671837
168901	389864	267891	267834	167990
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XXXIII.

(280)	(281)	(282)	(283)	(284)
486413	418786	489134	600078	300000
164184	219186	189193	112076	108819
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(285)	(286)	(287)	(288)	(289)
600043	768374	9000134	687834	891670
288811	237838	2999138	287788	191678
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(290)	(291)	(292)	(293)	(294)
860733	418671	387891	678342	678913
418787	141678	213874	328786	218673
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XXXIV.

TABLE.

9 from 10 leaves 1.	9 from 13 leaves 4.	9 from 16 leaves 7.
9 from 11 leaves 2.	9 from 14 leaves 5.	9 from 17 leaves 8.
9 from 12 leaves 3.	9 from 15 leaves 6.	9 from 18 leaves 9.

*Table Exercise.*

10 + 9 = ?	11 + 9 = ?	12 + 9 = ?	13 + 9 = ?	14 + 5 = ?	<i>etc.</i>
10 - 9 = ?	11 - 9 = ?	12 - 9 = ?	13 - 9 = ?	14 - 5 = ?	<i>etc.</i>
20 + 9 = ?	21 + 9 = ?	22 + 9 = ?	23 + 9 = ?	24 + 5 = ?	<i>etc.</i>
20 - 9 = ?	21 - 9 = ?	22 - 9 = ?	23 - 9 = ?	24 - 5 = ?	<i>etc.</i>
30 + 9 = ?	31 + 9 = ?	32 + 9 = ?	33 + 9 = ?	34 + 5 = ?	<i>etc.</i>
30 - 9 = ?	31 - 9 = ?	32 - 9 = ?	33 - 9 = ?	34 - 5 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

9	5	10	18	12	11	14	13	14	16	17
9	9	9	9	9	9	9	9	9	9	9
—	—	—	—	—	—	—	—	—	—	—

(2)

19	21	20	22	28	27	23	25	24	26
9	9	9	9	9	9	9	9	9	9
—	—	—	—	—	—	—	—	—	—

(3)

29	31	30	33	32	35	34	38	37	36
9	9	9	9	9	9	9	9	9	9
—	—	—	—	—	—	—	—	—	—

## LESSON XXXV.

## MENTAL EXERCISES.

1. If John has one apple and gives it to William, how many has he left?

2. If Charles has 9 oranges and his older brother takes them from him, how many will he have left?

3. James saw 15 birds on a tree; 9 flew away, how many remained?

4. Reuben had 14 cherries, he ate 9; how many had he left?

5. There were 11 chairs in the room; 9 were taken away, how many remained?

6. There were 28 sheep in a fold, a wolf broke in and killed 9; how many were left alive?

7. There are 27 scholars in a school; 9 of them are boys, how many are girls?

8. Montgomery has 31 cents, he spends 9 cents for pea-nut candy; how many cents has he left.

9. Alexander ate 5 cents' worth of the candy; how much is left for Montgomery?

10. Ada has 19 pins in her cushion; Nettie takes out 2 and Nellie 7; how many pins remain in the cushion?

11. Willie bought 22 marbles, but in the first game he lost 9; how many had he left?

12. Ella is 16 years old and Willie is only 4 years, how much older is Ella than Willie?

13. Ella is 16 years old and Julia is 9, how much older is Ella than Julia?

### LESSON XXXVI. WRITTEN EXERCISES.

(295)	(296)	(297)	(298)
418786434	918786413	918718642	918718642
48041783	21867183	418938648	318718648
<hr/>	<hr/>	<hr/>	<hr/>
(299)	(300)	(301)	(302)
878641378	41878642	3967837864	418786243
138964179	34188762	139180067	213786983
<hr/>	<hr/>	<hr/>	<hr/>

(303)	(304)	(305)	(306)
41878643	918768434	371864153	918670034
20878699	30190132	41878642	31671832
<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XXXVII.

(307)	(308)	(309)	(310)
4000700	3000007	410010106	370130712
64	40009	110101006	171031719
<hr/>	<hr/>	<hr/>	<hr/>

(311)	(312)	(313)	(314)
67083701	91876412	4187643	91876884
24083710	3876814	1738878	11761023
<hr/>	<hr/>	<hr/>	<hr/>

(315)	(316)	(317)	(318)
40000006	40000000	2000000	6000000
30000009	36666667	188889	5999999
<hr/>	<hr/>	<hr/>	<hr/>

## LESSON XXXVIII.

(319)	(320)	(321)	(322)
60000000	910101010	4040404	801080180
11030103	801010101	3014401	710181081
<hr/>	<hr/>	<hr/>	<hr/>

(323)	(324)	(325)	(326)
41803012	41867083	64187839	418786412
13814236	31210789	13117814	211030
<hr/>	<hr/>	<hr/>	<hr/>

(327)	(328)	(329)	(330)
41860003	20300000	6700000	406010416
17001	1000009	10109	14661210
<hr/>	<hr/>	<hr/>	<hr/>

331. A man sold 347 pounds of rice to one man and 427 pounds to another; how many pounds did he sell in all?

332. A merchant sold 430 yards of calico to one man and 230 yards to another; how much did he sell to both?

333. A farmer bought 36 sheep for 137 dollars at one time, and 47 sheep for 220 dollars at another time; how much did the sheep cost him?

334. A man bought 367 yards of calico for which he paid 37 dollars, he sold it so as to gain 23 dollars; how much did he sell it for?

335. A boy bought 38 marbles, but afterward lost 17; how many marbles had he left?

336. A boy gave a dollar bill to pay for a slate that cost 34 cents; how much change should he receive back?

337. A boy gave a dollar bill to pay for 2 books which cost 98 cents; how much change should he receive?

338. A little girl had a three-dollar bill, she wished to buy a doll which cost 90 cents; how much change should she receive?

339. A little girl had a five-dollar bill, she bought a book for 99 cents; how much change should she receive?

340. A little boy had a fifty-cent piece, he bought a slate, pencil and arithmetic for 43 cents: the shop-keeper gave him 5 cents change; what should he have received?

341. Samuel bought a melon for 94 cents, he gave a dollar bill and received 15 cents change; how much should he have received?

342. Arthur and James paid for a bushel of nuts which cost 437 cents, Arthur paid 240 cents and James was to pay the remainder; he gave a two-dollar bill; should he receive any change?

343. A man bought a house for 834 dollars; how much will he have left of a thousand-dollar bill?

344. A man bought a horse for 195 dollars; how much change should he receive from two hundred-dollar bills?

345. A boy had 113 marbles, he bought 25 more; how many had he then? He then gave away 11; how many had he left? How many more must he get to make the number 200?

346. A grocer paid 370 cents for a box of raisins and 480 cents for some oranges; how much more did he give for the oranges than the raisins?

347. A farmer had 340 pounds of cheese, he sold 260 pounds; how much remained?

348. A man is 320 miles from home after he had travelled 46 miles; how far is he from home?

349. A little boy ran 44 rods up the road and then ran back; how far did he run in all?

350. Two little boys started to run a race, one ran 53 rods the other 29 rods; how far were they apart?

351. A boy shot an arrow up the road 173 feet, and another down the road 211 feet; how far were the arrows apart?

352. He asked a little boy to bring the arrows to him; how far must he walk to get them?



## SECTION IV.

### LESSON I.

If there are 10 windows on one side of a car, how many windows on both sides of the car ?

FORMULA.—If there are 10 windows on one side of the car, on both sides there are 2 times 10 windows, which is 20 windows ; therefore there are 20 windows in the car.

1. If 1 lead pencil costs 3 cents what will 2 lead pencils cost ?

FORMULA.—If 1 lead pencil costs 3 cents, 2 lead pencils will cost 2 times 3 cents, which are 6 cents.



Therefore, if 1 lead pencil costs 3 cents, 2 lead pencils will cost 6 cents.

2. If 1 hoop costs 6 cents how much will 2 hoops cost at the same rate?

3. There are 5 apples on one branch, how many apples on two such branches?

4. James was fishing two hours; he caught 7 fishes each hour; how many fishes did he catch?

5. If one cocoa-nut is worth 8 cents, how much are two cocoa-nuts worth?

6. What cost 2 quarts of chestnuts at 12 cents a quart? at 9 cents? at 11 cents?

7. At 10 cents a gallon, what cost two gallons of vinegar?

8. If butter is 12 cents a pound, what will 2 pounds cost?

9. In 1 dime there are 10 cents; how many cents in 2 dimes?

10. In 1 quart there are 2 pints; how many pints in 7 quarts?

11. There are 2 *halves* in one unit; how many *halves* in 6 units?

12. If one book costs 1 cent, what will two books cost?

13. If one apple costs two cents, what will 9 apples cost?

14. What cost 2 quarts of walnuts at 8 cents a quart? at 7 cents? at 4 cents?

15. If 1 inkstand costs 6 cents what will 2 inkstands cost?

## LESSON III.

## WRITTEN EXERCISES,\*

in which the product of each figure does not exceed nine.

(1)	(2)	(3)	(4)	(5)
130243	240143	324123	34121043	21434213
2	2	2	2	2
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(6)	(7)	(8)	(9)	(10)
340432	4412304	3241230	4130423	4130243
2	2	2	2	2
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(11)	(12)	(13)	(14)	(15)
304034	3401043	34234204	34142304	30412343
2	2	2	2	2
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON IV.

(16)	(17)	(18)	(19)	(20)
403402	3042043	4203042	3042041	3042304
2	2	2	2	2
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(21)	(22)	(23)	(24)	(25)
4304014	3042043	4304123	4230423	41230413
2	2	2	2	2
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(26)	(27)	(28)	(29)	(30)
3040204	4302432	423042	340243	3204302
2	2	2	2	2
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

\* TO THE TEACHER.—The teacher should take occasion to explain the method of multiplication when the product of each figure does not exceed nine.

LESSON V.

TABLE.

Once 0 is 0.	0 times 2 are 0.	0 times 3 are 0.
Once 1 is 1.	1 times 2 are 2.	1 times 3 are 3.
Once 2 is 2.	2 times 2 are 4.	2 times 3 are 6.
Once 3 is 3.	3 times 2 are 6.	3 times 3 are 9.
Once 4 is 4.	4 times 2 are 8.	4 times 3 are 12.
Once 5 is 5.	5 times 2 are 10.	5 times 3 are 15.
Once 6 is 6.	6 times 2 are 12.	6 times 3 are 18.
Once 7 is 7.	7 times 2 are 14.	7 times 3 are 21.
Once 8 is 8.	8 times 2 are 16.	8 times 3 are 24.
Once 9 is 9.	9 times 2 are 18.	9 times 3 are 27.
Once 10 is 10.	10 times 2 are 20.	10 times 3 are 30.
Once 11 is 11.	11 times 2 are 22.	11 times 3 are 33.
Once 12 is 12.	12 times 2 are 24.	12 times 3 are 36.

BLACKBOARD EXERCISES.

(1)

1	3	2	0	7	4	6	5	8	10	11	9	12
3	3	3	3	3	3	3	3	3	3	3	3	3
—	—	—	—	—	—	—	—	—	—	—	—	—

(2)

3	3	3	3	3	3	3	3	3	3	3	3	3
0	1	12	2	3	11	4	10	5	9	6	8	7
—	—	—	—	—	—	—	—	—	—	—	—	—

LESSON VI.

MENTAL EXERCISES.

1. If one sheep cost 2 dollars, what will 3 sheep cost?

SOLUTION.—The solution is the same as in the preceding exercises.

2. A butcher paid 2 dollars a head for sheep, what will 7 sheep cost at that rate?

3. What will 3 hats cost at 8 dollars a piece?

4. At 8 dollars a week how much will a man earn in three weeks?

4. In a half-dime there are 5 cents; how many cents in 3 half-dimes?

5. Twelve single things make a dozen; how many single things make 3 dozen?

6. There are ten cents in one dime; how many cents are there in 3 dimes?

7. In one dram, Apothecaries' Weight, there are 3 scruples; how many scruples in 9 drams of the same weight?

8. There are 7 days in a week; how many days in three weeks?

9. If a boy works 5 hours in a day, how many hours does he work in 3 days?

10. There are 9 square feet in a square yard; how many square feet in 3 square yards?

11. There are 11 hop-poles in a row; how many hop-poles in three such rows?

12. In a dozen there are 12 units, how many units in 3 dozen?

13. What will 9 oranges cost at 3 cents each?

14. What will 4 pairs of boots cost at 3 dollars a pair?

15. What will 7 yards of tape cost at 3 cents a yard?

16. What will 9 pairs of cotton gloves cost at 3 shillings a pair?

17. What will 3 books cost at 9 shillings apiece?

18. In one unit there are 3 thirds; how many thirds in 8 units?

19. In one orange there are 7 sevenths; how many sevenths in 3 oranges?

20. In one unit there are 12 twelfths; how many twelfths are there in 3 units?

## LESSON VII.

## WRITTEN EXERCISES,\*

In which the product of each figure equals or exceeds nine but is less than twenty.

(31)	(32)	(33)	(34)	(35)
1563464	3456356	3435634	4343654	345346
3	3	3	3	3
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(36)	(37)	(38)	(39)	(40)
4364364	3464354	4356434	433465	43456434
3	3	3	3	3
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(41)	(42)	(43)	(44)	(45)
3454364	3446454	3434464	3430345	4343434
3	3	3	3	3
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON VIII.

(46)	(47)	(48)	(49)	(50)
4343445	6434645	3464354	34435456	3434456
3	3	3	3	3
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(51)	(52)	(53)	(54)	(55)
3456454	3454645	4543456	6534356	3545464
3	3	3	3	3
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(56)	(57)	(58)	(59)	(60)
4345464	43454345	45345464	54345434	54345345
3	3	3	3	3
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

\* NOTE —The teacher should take occasion to explain the method of carrying when the product of each figure exceeds nine.

## LESSON IX.

TABLE.

1 time 4 is 4.	5 times 4 are 20.	9 times 4 are 36.
2 times 4 are 8.	6 times 4 are 24.	10 times 4 are 40.
3 times 4 are 12.	7 times 4 are 28.	11 times 4 are 44.
4 times 4 are 16.	8 times 4 are 32.	12 times 4 are 48.

*Table Exercise.*

10 + 4 = ?	11 + 4 = ?	12 + 4 = ?	13 + 4 = ?	14 + 4 = ?	<i>etc.</i>
10 - 4 = ?	11 - 4 = ?	12 - 4 = ?	13 - 4 = ?	14 - 4 = ?	<i>etc.</i>
10 × 4 = ?	11 × 4 = ?	12 × 4 = ?	13 × 4 = ?	14 × 4 = ?	<i>etc.</i>
20 + 4 = ?	21 + 4 = ?	22 + 4 = ?	23 + 4 = ?	24 + 4 = ?	<i>etc.</i>
20 - 4 = ?	21 - 4 = ?	22 - 4 = ?	23 - 4 = ?	24 - 4 = ?	<i>etc.</i>
20 × 4 = ?	21 × 4 = ?	22 × 4 = ?	23 × 4 = ?	24 × 4 = ?	<i>etc.</i>
30 + 4 = ?	31 + 4 = ?	32 + 4 = ?	33 + 4 = ?	34 + 4 = ?	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

0	1	9	2	11	12	3	8	10	4	7	5	6
4	4	4	4	4	4	4	4	4	4	4	4	4
-	-	-	-	-	-	-	-	-	-	-	-	-

(2)

4	4	4	4	4	4	4	4	4	4	4	4	4
1	0	2	4	3	12	5	7	6	9	8	11	10
-	-	-	-	-	-	-	-	-	-	-	-	-

## LESSON X.

## MENTAL EXERCISES.

1. In one yard there are 3 feet; how many feet are there in four yards?

2. There are 4 gills in one pint; how many gills in 7 pints?

3. There are 5 quires in a *quarter* of a ream of paper; how many quires in four *quarters* of a ream?

4. If there are 7 days in one week, how many days in four weeks?

5. If a cannon ball weighs 4 pounds, how much will 8 balls of the same size weigh?

6. There are eight quarts in a peck; how many quarts in 11 pecks?

7. There are 4 hop-poles, each pole is 12 feet long, what is the united length of the four poles?

8. There are 4 *quarters* in one apple; how many *quarters* in 6 apples?

9. There are 7 *sevenths* in one apple, how many *sevenths* in 4 apples?

10. There are 9 *ninths* in one unit; how many *ninths* in 4 units?

11. What will 4 hats cost at 12 shillings apiece?

12. What will 4 kites cost at a cent apiece?

13. There are 8 eighths in one unit? how many eighths in 4 units?

14. If 1 slate is worth 11 cents, how much are 4 slates worth?

15. If 4 weeks make a month, how many weeks in 8 months?

16. If 1 pair of boots costs 5 dollars what will 4 pairs cost?

17. If 1 cap costs 10 shillings, what will 4 caps cost at the same price?

18. If a man can eat 12 ounces of bread in one day, how much can 4 men eat in the same time?

19. If 6 men can drink 4 gallons of beer in a week, how many gallons can they drink in 9 weeks?

20. If one man can drink 9 gallons of cider in 2 weeks, how many gallons can 4 men drink in the same time?

4. There are 10 *tenths* in one apple, how many *tenths* in 5 apples?

5. If one pound of sugar cost 5 cents, how many cents will 12 pounds cost?

6. One piece of tape costs 11 cents; how much will 5 pieces cost?

7. There are ten cents in one dime; how many cents in five dimes?

8. If a boy performs 12 examples each day, how many will he perform in 5 days?

9. There are 6 books in a row; how many books in 5 such rows?

10. If 1 top costs two cents, how much will 5 tops cost?

11. One kite costs 4 cents; how much will 5 kites cost at the same rate?

12. I have five sticks, each 3 feet long; what is the united length of the sticks?

#### LESSON XV.

#### WRITTEN EXERCISES.

91. Multiply 378641783 by 2, by 3, by 4, by 5.

92. Multiply 478600324 by 2, by 3, by 4, by 5.

93. Multiply 378641834 by 2, by 3, by 4, by 5.

94. Multiply 468371834 by 2, by 3, by 4, by 5.

95. Multiply 37186004 by 2, by 3, by 4, by 5.

96. Multiply 378642014 by 2, by 3, by 4, by 5.

97. Multiply 42786423 by 2, by 3, by 4, by 5.

98. Multiply 37862404 by 2, by 3, by 4, by 5.

99. Multiply 33420423 by 2, by 3, by 4, by 5



## LESSON XVI.

100. What will 4070 lemons cost at 2 cents each?  
At 3 cents each? At 4 cents each? At 5 cents each?

101. What will 37086 oranges cost at 2 cents each?  
At 3 cents each? At 4 cents each? At 5 cents each?

102. A man paid 387 dollars for a house; how much  
should he give for 2 such houses? For 3 such houses?  
For 4 such houses? For 5 such houses?

103. What must I give for 487 apples at 2 cents each?  
At 3 cents each? At 4 cents each? At 5 cents each?

104. How many *halves* in 3437 apples? How many  
*thirds*? How many *fourths*? How many *fifths*?

105. A man bought 3742 apples at 2 cents each,  
260653 oranges at 4 cents each, 4989 peaches at 3 cents  
each, 3742 lemons at 5 cents each; what did each cost?

106. Write 341372 twice and add it; write it three  
times and add it; write it four times; five times.

107. A man bought at one time 6608 pounds of cot-  
ton, at another 398 pounds; how many pounds had he  
then? He afterward sold 5871 pounds; how much had  
he left? He then sold 897 pounds of the remainder;  
how much did he still have? He finally bought 1588  
pounds; how much did he then have?

108. Three hundred and twenty-four dollars is *one-  
half* of what number of dollars? 324 dollars is *one-third*  
of what number of dollars? 324 dollars is *one-fourth* of  
what number of dollars? 324234 dollars is *one-fifth* of  
what number of dollars?

109. What will 3043 pair of boots cost at 2 dollars a  
pair? At 3 dollars? At 4 dollars? At 5 dollars?

## LESSON XVII.

## TABLE.

1 time 6 is 6.	5 times 6 are 30.	9 times 6 are 54.
2 times 6 are 12.	6 times 6 are 36.	10 times 6 are 60.
3 times 6 are 18.	7 times 6 are 42.	11 times 6 are 66.
4 times 6 are 24.	8 times 6 are 48.	12 times 6 are 72.

*Table Exercise.*

10 + 6;	11 + 6;	12 + 6;	13 + 6;	14 + 6;	15 + 6; etc.
10 - 6;	11 - 6;	12 - 6;	13 - 6;	14 - 6;	15 - 6; etc.
10 × 6;	11 × 6;	12 × 6;	13 × 6;	14 × 6;	15 × 6; etc.
20 + 6;	21 + 6;	22 + 6;	23 + 6;	24 + 6;	25 + 6; etc.
20 - 6;	21 - 6;	22 - 6;	23 - 6;	24 - 6;	25 - 6; etc.
20 × 6;	21 × 6;	22 × 6;	23 × 6;	24 × 6;	25 × 6; etc.
30 + 6;	31 + 6;	32 + 6;	33 + 6;	34 + 6;	35 + 6; etc.
<i>e'tc.</i>	<i>etc</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>

## BLACKBOARD EXERCISES.

(1)

1	2	0	4	12	5	3	9	8	6	10	7	11
6	6	6	6	6	6	6	6	6	6	6	6	6
—	—	—	—	—	—	—	—	—	—	—	—	—

(2)

6	6	6	6	6	6	6	6	6	6	6	6	6
1	0	2	3	4	11	10	9	12	8	7	6	5
—	—	—	—	—	—	—	—	—	—	—	—	—

## LESSON XVIII.

1. If you give one cent for a pencil, how many cents must you give for 6 pencils at the same rate?

2. If one lemon costs 2 cents, what will six lemons cost?

3. If one orange costs 3 cents, what will 6 oranges cost?

4. What will 7 melons cost at 6 cents apiece?

5. What will 9 skeins of silk cost at 6 cents apiece?

6. What will 11 boxes of lemons cost at 6 dimes a box?

7. At 8 shillings a bushel, what cost six bushels of sweet potatoes?

8. At 9 cents a pound, what cost 6 pounds of cheese?

9. If I can earn 10 dollars in one month, how much can I earn in 6 months?

10. John spent 7 dollars in one month; how much at that rate, will he spend in 6 months?

11. A freight train can run 11 miles in an hour; how many miles at that rate, can it run in 6 hours?

12. If a horse travels 12 miles in a day, how far at that rate will he travel in 6 days?

13. At 9 cents a pound, how much will 6 pounds of sugar cost?

14. At 8 cents a pound, how much will 6 pounds of rice cost?

15. I purchased 6 writing-books at 10 cents each, what was the cost?

16. How much will 10 inkstands cost at 6 cents each?

17. In one unit there are 6 *sixths*; how many *sixths* in 11 units?

18. In one unit there are 10 *tenths*; how many *tenths* in 6 units?

19. In one apple there are 4 quarters; how many quarters in 6 apples?

20. If the interest on one dollar for one year is 8 cents, what will be the interest on 6 dollars for the same time?

LESSON XIX.  
WRITTEN EXERCISES.

(110) 3741064 6 <hr/>	(111) 34071064 6 <hr/>	(112) 3718643 6 <hr/>	(113) 41890701 6 <hr/>	(114) 4196804 6 <hr/>
(115) 37604134 6 <hr/>	(116) 6786804 6 <hr/>	(117) 3740134 6 <hr/>	(118) 6896083 6 <hr/>	(119) 41968341 6 <hr/>
(120) 3718642 6 <hr/>	(121) 4186742 6 <hr/>	(122) 3786413 6 <hr/>	(123) 4908370 6 <hr/>	(124) 37186412 6 <hr/>

LESSON XX.

125. Multiply 37418643 by 3, by 4, by 5, by 6.
126. Multiply 4683413 by 3, by 4, by 5, by 6.
127. Multiply 3424160 by 3, by 4, by 5, by 6.
128. Multiply 4680309 by 3, by 4, by 5, by 6.
129. Multiply 32016092 by 3, by 4, by 5, by 6.
130. Multiply 20680437 by 3 by 4, by 5, by 6.
131. Multiply 30641872 by 3, by 4, by 5, by 6.
132. Multiply 34670843 by 3, by 4, by 5, by 6.
133. Multiply 48678342 by 3, by 4, by 5, by 6.
134. Multiply 37864372 by 3, by 4, by 5, by 6.
135. Multiply 39786042 by 3, by 4, by 5, by 6.
136. Multiply 4234671 by 3, by 4, by 5, by 6.
137. Multiply 3246721 by 3, by 4, by 5, by 6.
138. Multiply 4234261 by 3, by 4, by 6, by 5.
139. Multiply 3241632 by 3, by 4, by 6, by 5.

## LESSON XXI.

## TABLE.

1 time 7 is 7.	5 times 7 are 35.	9 times 7 are 63.
2 times 7 are 14.	6 times 7 are 42.	10 times 7 are 70.
3 times 7 are 21.	7 times 7 are 49.	11 times 7 are 77.
4 times 7 are 28.	8 times 7 are 56.	12 times 7 are 84.

*Table Exercise.*

10 + 7;	11 + 7;	12 + 7;	13 + 7;	14 + 7;	15 + 7; etc.
10 - 7;	11 - 7;	12 - 7;	13 - 7;	14 - 7;	15 - 7; etc.
10 × 7;	11 × 7;	12 × 7;	13 × 7;	14 × 7;	15 × 7; etc.
20 + 7;	21 + 7;	22 + 7;	23 + 7;	24 + 7;	25 + 7; etc.
20 - 7;	21 - 7;	22 - 7;	23 - 7;	24 - 7;	25 - 7; etc.
20 × 7;	21 × 7;	22 × 7;	23 × 7;	24 × 7;	25 × 7; etc.
30 + 7;	31 + 7;	32 + 7;	33 + 7;	34 + 7;	35 + 7; etc.
etc.	etc.	etc.	etc.	etc.	etc.

## BLACKBOARD EXERCISES.

(1)

12	0	1	7	6	8	2	9	5	10	3	11	4
7	7	7	7	7	7	7	7	7	7	7	7	7
—	—	—	—	—	—	—	—	—	—	—	—	—

(2)

7	7	7	7	7	7	7	7	7	7	7	7	7
0	4	1	3	2	6	7	5	12	9	8	11	10
—	—	—	—	—	—	—	—	—	—	—	—	—

## LESSON XXII.

## MENTAL EXERCISES.

1. Since there are 2 pints in one quart, how many pints in 7 quarts?
2. In one unit there are 9 *ninths*, how many *ninths* in 7 units?
3. What will 7 pairs of shoes cost at 2 dollars a pair?
4. What will 9 barrels of flour cost at 7 dollars a barrel?

5. What will 11 yards of broadcloth cost at 7 dollars a yard?

6. What will 12 books cost at 7 shillings a volume?

7. Since there are 3 feet in one yard, how many feet in 7 yards?

8. There are 4 gills in one pint; how many gills in 7 pints.

9. The interest on one dollar for one year in the state of New York is 7 cents; what is the interest on 12 dollars for the same time in the same state?

10. The interest on one dollar for one year in the state of New Jersey is 6 cents; what is the interest on 7 dollars in the same state for the same time?

11. There are 7 days in one week; how many days in 9 weeks?

12. There are 9 square feet in one square yard; how many square feet in 7 square yards?

13. James is 8 years old; how old will he be when he is 7 times as old as he now is?

14. There are 12 inches in one foot; how many inches in 7 feet?

15. What cost 9 baskets of peaches at 7 shillings a basket?

16. A boy earned 7 shillings in one week; how much at that rate can he earn in 9 weeks?

17. George learned 7 pages of Greek in one week; at that rate how much will he learn in 11 weeks?

18. Montgomery required Heberton to perform 12 examples in Algebra at one lesson; at that rate how many examples will he perform in 7 weeks?

## LESSON XXIII.

## WRITTEN EXERCISES.

140. Multiply 3741867 by 4, by 5, by 6, by 7.
141. Multiply 4786344 by 4, by 5, by 6, by 7.
142. Multiply 4978672 by 4, by 5, by 6, by 7.
143. Multiply 3741863 by 4, by 5, by 6, by 7.
144. Multiply 4186742 by 4, by 5, by 6, by 7.
145. Multiply 3968413 by 4, by 5, by 6, by 7.
146. Multiply 9786421 by 4, by 5, by 6, by 7.
147. Multiply 4871832 by 4, by 5, by 6, by 7.
148. Multiply 467834 by 4, by 5, by 6, by 7.
149. Multiply 1014702 by 4, by 5, by 6, by 7.
150. Multiply 4345674 by 4, by 5, by 6, by 7.
151. Multiply 3490416 by 4, by 5, by 6, by 7.
152. Multiply 3708043 by 4, by 5, by 6, by 7.

## LESSON XXIV.

153. Multiply 9680724 by 4, by 5, by 6, by 7.
154. Multiply 3968072 by 4, by 5, by 6, by 7.
155. Multiply 4196718 by 4, by 5, by 6, by 7.
156. Multiply 3419672 by 4, by 5, by 6, by 7.
157. Multiply 89180034 by 4, by 5, by 6, by 7.
158. Multiply 60789019 by 4, by 5, by 6, by 7.
159. Multiply 1670834 by 4, by 5, by 6, by 7.
160. Multiply 1307604 by 4, by 5, by 6, by 7.
161. Multiply 4070683 by 4, by 5, by 6, by 7.
162. Multiply 4030412 by 4, by 5, by 6, by 7.
163. Multiply 3070412 by 4, by 5, by 6, by 7.
164. Multiply 4030712 by 4, by 5, by 6, by 7.

## LESSON XXV.

TABLE.

1 time 8 is 8.	5 times 8 are 40.	9 times 8 are 72.
2 times 8 are 16.	6 times 8 are 48.	10 times 8 are 80.
3 times 8 are 24.	7 times 8 are 56.	11 times 8 are 88.
4 times 8 are 32.	8 times 8 are 64.	12 times 8 are 96.

*Table Exercise.*

10 + 8;	11 + 8;	12 + 8;	13 + 8;	14 + 8;	15 + 8;	<i>etc.</i>
10 - 8;	11 - 8;	12 - 8;	13 - 8;	14 - 8;	15 - 8;	<i>etc.</i>
10 × 8;	11 × 8;	12 × 8;	13 × 8;	14 × 8;	15 × 8;	<i>etc.</i>
20 + 8;	21 + 8;	22 + 8;	23 + 8;	24 + 8;	25 + 8;	<i>etc.</i>
20 - 8;	21 - 8;	22 - 8;	23 - 8;	24 - 8;	25 - 8;	<i>etc.</i>
20 × 8;	21 × 8;	22 × 8;	23 × 8;	24 × 8;	25 × 8;	<i>etc.</i>
30 + 8;	31 + 8;	32 + 8;	33 + 8;	34 + 8;	35 + 8;	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

1	0	5	6	2	4	3	12	7	11	10	9	8
8	8	8	8	8	8	8	8	8	8	8	8	8
-	-	-	-	-	-	-	-	-	-	-	-	-

(2)

8	8	8	8	8	8	8	8	8	8	8	8	8
1	2	0	12	3	11	9	10	8	6	7	5	4
-	-	-	-	-	-	-	-	-	-	-	-	-

## LESSON XXVI.

## MENTAL EXERCISES.

1. There are 4 pecks in one bushel; how many pecks in 8 bushels?
2. What will 8 books cost, if one book cost 12 cents?
3. How many days in 8 weeks? in 7 weeks?
4. If one orange costs 4 cents, what will 8 oranges cost at the same rate?



5 Peter buys 8 lemons at 8 cents each, what do they cost?

6. Charles bought 8 tops at 4 cents each; what did they cost?

7. Henry bought 11 pencils at 8 cents each; what did he give for them?

8. Thomas purchased 9 primers at 8 cents each; what did he give for them?

9. Samuel purchased 8 inkstands at 12 cents each; what did he give for them?

10. In one unit there are 8 *eighths*; how many *eighths* in 3 units? in 4 units? in 11 units?

11. In one pie there are ten *tenths*; how many *tenths* in 4 pies? in 8 pies? in 7 pies? in 1 pie?

12. In one apple there are 7 *sevenths*; how many *sevenths* in 8 apples? in 3 apples? in 6 apples? in 2 apples?

13. I bought 3 apples at 2 cents apiece, and 3 oranges at 4 cents apiece; how much did I give for all?

14. I sold 3 quarts of chestnuts for 11 cents a quart, and then gave 5 cents of what I received to a poor boy; what did I have left?

15. I sold 8 quarts of walnuts for 12 cents a quart, and then gave 8 cents of what I received for a book; how much money had I left?

16. How much will 8 slate pencils cost at 2 cents apiece?

17. How much will 8 hats cost at 2 dollars apiece?

18. How much will 8 pairs of boots cost at 3 dollars a pair?

## LESSON XXVII.

## WRITTEN EXERCISES.

165. Multiply 34108643 by 5, by 6, by 7, by 8.
166. Multiply 470370864 by 5, by 6, by 7, by 8.
167. Multiply 3780416413 by 5, by 6, by 7, by 8.
168. Multiply 4067124 by 5, by 6, by 7, by 8.
169. Multiply 86783407 by 5, by 6, by 7, by 8.
170. Multiply 678341864 by 5, by 6, by 7, by 8.
171. Multiply 478378062 by 5, by 6, by 7, by 8.
172. Multiply 41834784 by 5, by 6, by 7, by 8.
173. Multiply 683416803 by 5, by 6, by 7, by 8.
174. Multiply 41860034 by 5, by 6, by 7, by 8.
175. Multiply 3910670 by 5, by 6, by 7, by 8.
176. Multiply 3004012 by 5, by 6, by 7, by 8.
177. Multiply 550456 by 5, by 6, by 7, by 8.

## LESSON XXVIII.

178. Multiply 3098671 by 5, by 6, by 7, by 8.
179. Multiply 3021916 by 5, by 6, by 7, by 8.
180. Multiply 4896091 by 5, by 6, by 7, by 8.
181. Multiply 3780689 by 5, by 6, by 7, by 8.
182. Multiply 41969013 by 5, by 6, by 7, by 8.
183. Multiply 6709062 by 5, by 6, by 7, by 8.
184. Multiply 384022 by 5, by 6, by 7, by 8.
185. Multiply 303402 by 5, by 6, by 7, by 8.
186. Multiply 4030291 by 5, by 6, by 7, by 8.
187. Multiply 3078641 by 5, by 6, by 7, by 8.
188. Multiply 40307861 by 5, by 6, by 7, by 8.
189. Multiply 30799186 by 5, by 6, by 7, by 8.

## LESSON XXIX.

TABLE.

1 time 9 is 9.	5 times 9 are 45.	9 times 9 are 81.
2 times 9 are 18.	6 times 9 are 54.	10 times 9 are 90.
3 times 9 are 27.	7 times 9 are 63.	11 times 9 are 99.
4 times 9 are 36.	8 times 9 are 72.	12 times 9 are 108.

*Table Exercise.*

10 + 9;	11 + 9;	12 + 9;	13 + 9;	14 + 9;	15 + 9; etc.
10 - 9;	11 - 9;	12 - 9;	13 - 9;	14 - 9;	15 - 9; etc.
10 × 9;	11 × 9;	12 × 9;	13 × 9;	14 × 9;	15 × 9; etc.
20 + 9;	21 + 9;	22 + 9;	23 + 9;	24 + 9;	25 + 9; etc.
20 - 9;	21 - 9;	22 - 9;	23 - 9;	24 - 9;	25 - 9; etc.
20 × 9;	21 × 9;	22 × 9;	23 × 9;	24 × 9;	25 × 9; etc.
30 + 9;	31 + 9;	32 + 9;	33 + 9;	34 + 9;	35 + 9; etc.
etc.	etc.	etc.	etc.	etc.	etc.

## BLACKBOARD EXERCISES.

(1)

1	12	0	4	3	2	6	5	10	9	8	7	11
9	9	9	9	9	9	9	9	9	9	9	9	9
-	-	-	-	-	-	-	-	-	-	-	-	-

(2)

9	9	9	9	9	9	9	9	9	9	9	9	9
1	2	0	3	4	6	5	12	10	7	11	9	8
-	-	-	-	-	-	-	-	-	-	-	-	-

## LESSON XXX.

## WRITTEN EXERCISES.

1. If there are 4 seats in a row, how many seats in 9 rows?
2. If there are 7 boys in a class, how many boys in 9 classes of the same size?
3. If there are 8 boys and girls in 1 class, how many boys and girls in 9 classes of the same size?

4. If there are 9 sheep in one flock, how many sheep in 12 flocks of the same size?

5. If only 9 sheep can be kept in one pasture, how many sheep can be kept in 9 pastures of the same size?

6. There are 7 horses in one drove; how many horses in 9 droves of the same size?

## LESSON XXXI.

## WRITTEN EXERCISES.

190. Multiply 34678346 by 6, by 7, by 8, by 9.

191. Multiply 410348 by 6, by 7, by 8, by 9.

192. Multiply 340689 by 6, by 7, by 8, by 9.

193. Multiply 348704 by 6, by 7, by 8, by 9.

194. Multiply 328624 by 6, by 7, by 8, by 9.

195. Multiply 304062 by 6, by 7, by 8, by 9.

196. Multiply 340768 by 6, by 7, by 8, by 9.

197. Multiply 438706 by 6, by 7, by 8, by 9.

198. Multiply 380049 by 6, by 7, by 8, by 9.

199. Multiply 341070 by 6, by 7, by 8, by 9.

200. Multiply 41670 by 6, by 7, by 8, by 9.

201. Multiply 3801264 by 6, by 7, by 8, by 9.

202. Multiply 413042 by 6, by 7, by 8, by 9.

203. Multiply 302098 by 6, by 7, by 8, by 9.

## LESSON XXXII.

204. Multiply 340672 by 6, by 7, by 8, by 9.

205. Multiply 4370423 by 6, by 7, by 8, by 9.

206. Multiply 6840709 by 6, by 7, by 8, by 9.

207. Multiply 348604 by 6, by 7, by 8, by 9.

208. Multiply 418340 by 6, by 7, by 8, by 9.

209. Multiply 386412 by 6, by 7, by 8, by 9.

210. There are 56 sheep in one flock ; how many sheep in 6 such flocks ? What is the value of each flock at 7 dollars a head ? At 8 dollars ? At 9 dollars ?

211. A man bought 384 pounds of sugar, he sold 290 pounds ; how much had he left ? How much did he receive for what he sold, at 9 cents a pound ? What is the remainder worth at 8 cents a pound ? At 7 cents a pound ?

212. A merchant sold 378 kegs of nails at 9 dollars a keg ; 32 hundred weight of iron at 7 dollars a hundred ; what did each of the articles come to ? What did both come to ? He paid away 1389 dollars ; how much money had he left ?

213. There are 63 boys in a class ; each boy has 2 hands ; each boy has 2 feet ; each hand has 4 fingers ; each hand has 1 thumb ; how many hands have all the boys ? How many feet ? How many fingers ? How many thumbs ?

214. I have a book with 220 pages, there are 6 paragraphs on each page ; there are 9 lines in each paragraph ; there are 8 words in each line ; there are, on an average, 5 letters in each word ; how many paragraphs in the book ? How many lines ? How many words ? How many letters ?

215. A grocer sold 37 pounds of rice at 8 cents a pound ; 46 pounds of sugar at 9 cents a pound : what did the rice come to ? What did the sugar come to ? What did both come to ? What did one cost more than the other ?

216. A boy bought 37 pints of chestnuts at 8 cents a pint ; 46 pints of peanuts at 9 cents a pint ; what did each cost ? What did both cost ? How much did one cost more than the other ?

## LESSON XXXIII.

TABLE.

0	times	10	are	0.	0	times	11	are	0.
1	times	10	are	10.	1	times	11	are	11.
2	times	10	are	20.	2	times	11	are	22.
3	times	10	are	30.	3	times	11	are	33.
4	times	10	are	40.	4	times	11	are	44.
5	times	10	are	50.	5	times	11	are	55.
6	times	10	are	60.	6	times	11	are	66.
7	times	10	are	70.	7	times	11	are	77.
8	times	10	are	80.	8	times	11	are	88.
9	times	10	are	90.	9	times	11	are	99.
10	times	10	are	100.	10	times	11	are	110.
11	times	10	are	110.	11	times	11	are	121.
12	times	10	are	120.	12	times	11	are	132.

## BLACKBOARD EXERCISES.

(1)

0	1	12	2	11	3	10	4	9	5	8	6	7
10	10	10	10	10	10	10	10	10	10	10	10	10
—	—	—	—	—	—	—	—	—	—	—	—	—

(2)

1	4	2	3	6	5	8	7	10	11	9	0	12
11	11	11	11	11	11	11	11	11	11	11	11	11
—	—	—	—	—	—	—	—	—	—	—	—	—

## LESSON XXXIV.

## MENTAL EXERCISES.

1. What cost 10 apples at 2 cents apiece?
2. What cost 10 melons at 8 cents apiece?
3. What cost 10 citrons at ten cents apiece?
4. What cost 12 pine-apples at 10 cents apiece?
5. What cost 9 squashes at 10 cents apiece?
6. What cost 11 cabbages at 10 cents apiece?
7. What cost 10 loaves of bread at 5 cents a loaf?

8. What cost 11 oranges at four cents apiece?

9. If there are 11 *elevenths* in one unit, how many *elevenths* in 9 units?

10. If there are 7 days in one week, how many days in 12 weeks?

11. If there are 12 ounces in 1 pound, Troy Weight, how many ounces in 11 pounds, Troy Weight?

12. If there are 5 *fifths* in one unit, how many *fifths* in 11 units?

13. Five times 11, added to 7, are how many?

14. Four times 11, added to 5, are how many?

15. 9 times 11, *less* 5, are how many?

16. 6 times 11, *less* 8, are how many?

17. 12 times 11, *less* 7, are how many?

18. 8 times 11, *less* 10, are how many?

19. 3 times 11, *less* 3, are how many?

20. 2 times 11, *less* 20, are how many?

21. 2 times 8, *less* 5, are how many?

22. 4 times 8, *plus* 9, are how many?

23. 8 times 7, *plus* 3, are how many?

24. 5 times 9, *plus* 7, are how many?

25. 4 times 11, *less* 3, are how many?

26. 8 times 6, *less* 18, are how many?

27. 6 times 7, *less* 4, are how many?

28. 8 times 9, *less* 3, are how many?

29. 5 times 6, *less* 8, are how many?

30. 3 times 7, *less* 6, are how many?

31. 4 times 11, *less* 20, are how many?

32. 9 times 11, *plus* 20, are how many?

## LESSON XXXV.

## WRITTEN EXERCISES.

- 217. Multiply 3006084 by 11, by 12, by 13, by 14.
- 218. Multiply 3908706 by 13, by 14, by 15, by 16.
- 219. Multiply 4198307 by 15, by 16, by 17, by 18.
- 220. Multiply 4186983 by 17, by 18, by 19, by 20.
- 221. Multiply 4089678 by 19, by 20, by 21, by 22.
- 222. Multiply 4183076 by 21, by 22, by 23, by 24.
- 223. Multiply 498347 by 23, by 24, by 25, by 26.
- 224. Multiply 6783416 by 25, by 26, by 27, by 28.
- 225. Multiply 4189674 by 27, by 28, by 29, by 30.
- 226. Multiply 3786413 by 29, by 30, by 31, by 32.
- 227. Multiply 4678346 by 31, by 32, by 33, by 34.
- 228. Multiply 41867834 by 33, by 34, by 35, by 36.
- 229. Multiply 34867834 by 35, by 36, by 37, by 38.

## LESSON XXXVI.

- 230. Multiply 1342672 by 39, by 40, by 41, by 42.
- 231. Multiply 4186834 by 43, by 44, by 45, by 46.
- 232. Multiply 2189672 by 47, by 48, by 49, by 50.
- 233. Multiply 89168397 by 51, by 52, by 53, by 54.
- 234. Multiply 4108692 by 55, by 56, by 57, by 58.
- 235. Multiply 9878382 by 59, by 60, by 61, by 62.
- 236. Multiply 467834 by 63, by 64, by 65, by 66.
- 237. Multiply 38416 by 67, by 68, by 69, by 70.
- 238. Multiply 47034 by 71, by 72, by 73, by 74.
- 239. Multiply 37068 by 75, by 76, by 77, by 78.
- 240. Multiply 4070864 by 79, by 80, by 81, by 82.
- 241. Multiply 3070864 by 83, by 84, by 85, by 86.
- 242. Multiply 408706 by 87, by 88, by 89, by 90.



## LESSON XXXVII.

TABLE.

1 time 12 is 12	5 times 12 are 60	9 times 12 are 108
2 times 12 are 24	6 times 12 are 72	10 times 12 are 120
3 times 12 are 36	7 times 12 are 84	11 times 12 are 132
4 times 12 are 48	8 times 12 are 96	12 times 12 are 144

*Table Exercise.*

10 × 12;	11 × 12;	12 × 12;	13 × 12;	14 × 12;	15 × 12;	<i>etc.</i>
20 × 12;	21 × 12;	22 × 12;	23 × 12;	24 × 12;	25 × 12;	<i>etc.</i>
30 × 12;	31 × 12;	32 × 12;	33 × 12;	34 × 12;	35 × 12;	<i>etc.</i>
40 × 12;	41 × 12;	42 × 12;	43 × 12;	44 × 12;	45 × 12;	<i>etc.</i>
50 × 12;	51 × 12;	52 × 12;	53 × 12;	54 × 12;	55 × 12;	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

0	1	2	10	3	11	9	4	8	5	7	6	12
12	12	12	12	12	12	12	12	12	12	12	12	12
—	—	—	—	—	—	—	—	—	—	—	—	—

(2)

12	12	12	12	12	12	12	12	12	12	12	12	12
1	3	12	2	0	9	10	8	6	7	5	11	4
—	—	—	—	—	—	—	—	—	—	—	—	—

## LESSON XXXVIII.

## MENTAL EXERCISES.

1. If in each lesson you answer 12 questions correctly, how many correct answers would you give in 12 lessons?
2. If 9 gallons of water run into a cistern in one minute, how many gallons will run into it in 12 minutes?
3. A ship can sail 8 miles in an hour; how many miles can she sail in 12 hours?

4. There are 4 soldiers in one rank; how many soldiers in 12 ranks?

5. At 3 cents apiece what will 12 lemons cost?

6. At 12 cents apiece what will 2 pine-apples cost?

7. There are 5 school-hours in a day; how many school-hours in 12 days?

8. There are 11 yards in a piece of cloth; how many yards in 12 pieces of the same length?

9. There are 12 *twelfths* in a unit; how many *twelfths* in 7 units? in 8 units? in 5 units?

10. If one lead pencil cost 4 cents, what will 12 lead pencils cost?

11. If you receive 12 apples to-day and 12 to-morrow, how many will you receive on both days?

12. There are 6 working days in a week; how much can you earn, if you earn 12 cents each day?

13. What cost 11 quarts of chestnuts at 12 cents a quart?

14. Butter is 12 cents a pound; what will 9 pounds cost?

15. If a butcher pays 9 dollars a head for sheep, how much must he pay for 12 head?

16. Rice is 11 cents a pound; what will 12 pounds cost?

17. There are 5 *fifths* in 1 unit; how many *fifths* in 12 units;

18. There are 3 *thirds* in an orange; how many *thirds* in 12 oranges?

19. There are 7 *sevenths* in an apple; how many *sevenths* in 12 apples?

## LESSON XXXIX.

## WRITTEN EXERCISES.

- 243. Multiply 3470864 by 1, by 20, by 300, by 4000.
- 244. Multiply 4130768 by 5, by 60, by 700, by 8000.
- 245. Multiply 41890673 by 9, by 90, by 900, by 9000
- 246. Multiply 4983904 by 1, by 11, by 101, by 1001.
- 247. Multiply 4683419 by 2, by 22, by 202, by 2002.
- 248. Multiply 9786427 by 3, by 30, by 330, by 3300.
- 249. Multiply 4186438 by 4, by 44, by 444, by 4044.
- 250. Multiply 9678673 by 5, by 50, by 505, by 5500.
- 251. Multiply 4418684 by 3, by 30, by 207, by 5001.
- 252. Multiply 6968034 by 4, by 45, by 406, by 3101.
- 253. Multiply 4186372 by 6, by 37, by 206, by 3202.
- 254. Multiply 4186302 by 9, by 11, by 601, by 3701.
- 255. Multiply 4860960 by 2, by 12, by 402, by 4008.

## LESSON XL.

- 256. Multiply 4083786 by 4, by 24, by 302, by 6080.
- 257. Multiply 4183467 by 2, by 60, by 300, by 2008.
- 258. There are 36 yards in one piece of cloth; how many yards in 12 such pieces?
- 259. If a butcher pays 12 dollars a head for sheep, how much will 378 sheep cost him?
- 260. Bought 6783 pounds of rice at 15 cents a pound; what did it come to?
- 261. If a man owed 3789 dollars, and having paid 2786 dollars, how much does he still owe?
- 262. There are 365 days in one year; how many days in 21 years?

263. There are 24 hours in a day ; how many hours in 365 days or 1 year ?

264. There are 30 days in 1 month ; how many days in 42 months ?

265. There are 4 farthings in one penny ; how many farthings in 240 pence ?

266. There are 12 pence in one shilling ; how many pence in 640 shillings ?

267. There are 21 shillings in one guinea ; how many shillings in 325 guineas ?

268. In one pound avoirdupois there are 16 ounces ; how many ounces in 372 pounds ?

269. There are 100 pounds in one hundred weight ; how many pounds in 327 hundred weight ?

270. In one ton there are 2000 pounds ; how many pounds in 376 tons of coal ?

271. A barrel of flour weighs 196 pounds ; how many pounds in 370 barrels ?

272. In a barrel of beef, fish, or pork, there are 200 pounds ; how many pounds in 380 barrels ?

273. I bought 47 barrels of salt ; if each barrel weighs 280 pounds, how many pounds did I buy in all ?

274. This room is 21 feet long ; how many inches long is it if there are 12 inches in a foot ?

275. This room is 18 feet wide ; how many inches wide is it ?

276. The ceiling is 8 feet high, how many inches high is it ?

277. There are 3 feet in a yard ; the street is 18 yards wide ; how many feet is it ?

278. There are 320 rods in a mile ; how many rods in 27 miles ?

279. About 3 feet make a step, or a pace ; a man in walking across the garden, took 36 steps ; how many feet long is it ?

280. About 1760 steps make a mile ; how many steps in 3 miles ?

281. Thomas lived 2 miles from school ; how many steps must he take each day to go and return ?

282. His little brother takes 2 steps while Thomas takes one, how many steps must he take to go to school and return ?

283. There are 4 quarts in a gallon ; how many quarts in 46 gallons of molasses ?

284. Four gills make a pint ; how many gills in 37 pints of milk ?

285. In a quart there are 2 pints ; how many pints in 483 quarts of vinegar ?

286. In a peck there are 8 quarts ; how many quarts in 278 pecks of beans ?

287. In a bushel there are 4 pecks ; how many pecks in 467 bushels of apples ?

288. In a minute there are 60 seconds ; how many seconds in 380 minutes ?

289. In an hour there are 60 minutes ; how many minutes in 24 hours or a day ?

290. In a week there are 7 days ; how many days in 52 weeks ?

291. If John can solve ten problems a day, how many problems can he solve in a school year of 200 days ?

292. A dealer received an order for 374 barrels of beef; he had only 276 barrels on hand; how many barrels more will he require to fill the order?

293. The sales of my store for January amounted to 1837 dollars, and only 897 dollars in February; how much did I sell more in January than in February?

294. A gardener received in 1867, 4271 dollars for vegetables, his expenses were 1288 dollars; what were his profits?

295. If I owe 3864 dollars and pay 2187 dollars, how much do I still owe?

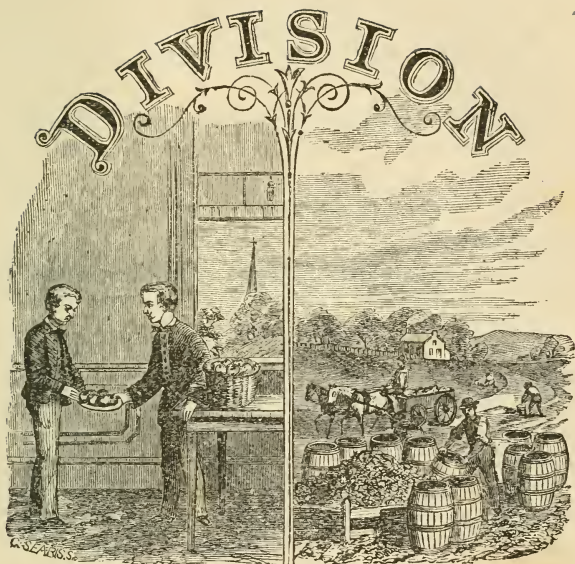
296. At the office of a Baltimore paper 157 reams of paper are used daily; at that rate how much paper will be required to last 307 days?

297. The annual imports at Charleston, S. C., amount to 983864 dollars, the exports of cotton amount to 1713465 dollars; how much does the annual exports exceed the imports?

298. In 1860, in North Carolina, the real estate was valued at 116,366,573 dollars; in South Carolina, it was valued at 129,772,684 dollars; how much did the real estate in South Carolina exceed in value the real estate in North Carolina?

299. Delaware contains an area of 2120 square miles, and Maryland 9356 square miles; how much larger is Maryland than Delaware?

300. Virginia contains 61322 square miles, Georgia, 58000 sq. m.; Florida, 59268 sq. m.; Alabama, 50722 sq. m.; Louisiana, 46431 sq. m.; Texas, 237321 sq. m.; Mississippi, 47156 sq. m.; Arkansas, 52198 sq. m.; Tennessee, 45600 sq. m.; how many square miles in all of the above States?



## SECTION V.

### LESSON I.

I divided 10 apples equally between 2 boys; how many did each boy receive?

FORMULA.—If 2 boys received 10 apples, 1 boy received one-half of 10 apples, which is 5 apples; therefore, each boy received 5 apples.

1. There are 24 bushels of potatoes in a pile; how many barrels will it take to hold them if each barrel holds 2 bushels?

FORM.—Since each barrel holds 2 bushels, it will take as many barrels as 2 bushels (can be subtracted from) are contained times in 24 bushels, which is 12; hence it will take 12 barrels to hold the potatoes

2. If I divide 12 nuts between 2 boys, how many nuts will each boy receive?

3. 2 girls have 14 cents; how many is that apiece?

4. 8 chestnuts are divided into 2 equal parts; how many nuts in each part?

5. 18 apples are divided into 2 equal parts; how many apples in each part?

6. If 2 dimes contain 20 cents, how many cents does 1 dime contain?

7. I wish to divide 12 peaches equally between my 2 children; how many must I give to each?

8. I have 4 marbles, and I wish to put an equal number into each of my two pockets; how many must I put into each?

9. I have 2 oranges which I wish to divide equally between Charles and Henry; how many must I give each?

10. If 2 boys receive 6 oranges, how many does one receive?

11. 2 men receive 16 dollars; how much does one man receive?

12. 2 men cut 18 cords of wood in a week; how much does one of the men cut?

---

\* The teacher should not fail to explain to the class what is meant by *one-half*, *one-third*, *one-fifth*, *one-ninth*, &c. The expression, *one-half of a number*, really means that the number is to be MULTIPLIED BY *one-half*, "of" in this place, meaning TIMES, and the product of the multiplication is equal to *one part*, of a number which is divided into two equal parts. The expression, *one-half of a number*, is so familiar to every child that we prefer it in this form of division to any other



13. 2 pounds of sugar cost 14 cents; what did 1 pound cost?

14. 2 pounds of cheese cost 12 cents; what did one pound cost?

15. 2 pounds of rice cost 10 cents; what did one pound cost?

## LESSON III.

## WRITTEN EXERCISES,

In which each figure of the Dividend is a multiple of the Divisor.

(1)	(2)	(3)	(4)	(5)
2)428642	2)208462	2)242680	2)424826	2)462860
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

(6)	(7)	(8)	(9)	(10)
2)428622	2)2046486	2)2064862	2)626882	2)62484660
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

(11)	(12)	(13)	(14)	(15)
2)468286	2)624286	2)624468	2)268246	2)2462842
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

## LESSON IV.

(16)	(17)	(18)	(19)	(20)
2)24486024	2)2482486	2)2426824	2)4628824	2)40608024
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

(21)	(22)	(23)	(24)	(25)
2)8060242	2)2064248	2)8426842	2)2482642	2)624286
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

(26)	(27)	(28)	(29)	(30)
2)2808642	2)4260842	2)6248264	2)2622278	2)4246824
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

(31)	(32)	(33)	(34)	(35)
2)24824268	2)42684284	2)624824682	2)24282486	2)24128642
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>

## LESSON V.

TABLE.

1 in 1, once.	2 in 2, once.	3 in 3, once.
1 in 2, twice.	2 in 4, twice.	3 in 6, twice.
1 in 3, 3 times.	2 in 6, 3 times.	3 in 9, 3 times.
1 in 4, 4 times.	2 in 8, 4 times.	3 in 12, 4 times.
1 in 5, 5 times.	2 in 10, 5 times.	3 in 15, 5 times.
1 in 6, 6 times.	2 in 12, 6 times.	3 in 18, 6 times.
1 in 7, 7 times.	2 in 14, 7 times.	3 in 21, 7 times.
1 in 8, 8 times.	2 in 16, 8 times.	3 in 24, 8 times.
1 in 9, 9 times.	2 in 18, 9 times.	3 in 27, 9 times.
1 in 10, 10 times.	2 in 20, 10 times.	3 in 30, 10 times.
1 in 11, 11 times.	2 in 22, 11 times.	3 in 33, 11 times.
1 in 12, 12 times.	2 in 24, 12 times.	3 in 36, 12 times.

## BLACKBOARD EXERCISES.

(1)

3) 3    10    4    9    13    1    12    8    5    7    6    11    2  
 —    —    —    —    —    —    —    —    —    —    —    —

(2)

3) 14    21    18    24    20    25    16    26    19    23    17    22    15  
 —    —    —    —    —    —    —    —    —    —    —    —

## LESSON VI.

## MENTAL EXERCISES.

1. If you were to divide 6 cents equally among 3 boys, how many cents would you give to each boy?

SOLUTION.—(See solution, Lesson II., Example 1.)

2. If a stick be nine feet long, and you cut it into three equal parts, how many feet long will each part be?

3. A boy wished to divide 12 marbles into three equal piles; how many marbles must there be in each pile?

4. Henry had 21 peach-stones which he planted in rows of three each; how many rows were there?

5. A teacher had in her school 24 scholars whom she divided into classes of three each; how many classes were there in the school?

6. If you should make 27 marks on your slate, and should separate them into groups of three each, how many groups would there be?

7. If 3 yards of twist cost 30 cents, what does one yard cost?

8. If 3 pounds of sugar cost 27 cents, what does one pound cost?

9. If 3 books cost 27 cents, what does one book cost?

10. If 3 sheep cost 36 dollars, what does one sheep cost?

11. I gave 21 cents for 3 melons; how much did one melon cost me?

12. I gave 18 cents for three bottles of ink; how much did one bottle cost?

13. A man bought 3 pigs, for which he gave 24 dollars; how much did one pig cost him?

14. A boy sold 3 quarts of chestnuts for 15 cents; how much did he receive for 1 quart?

15. A farmer sold 3 bushels of apples for 6 shillings; how much did he receive a bushel?

16. If a man drink 3 quarts of water in 3 half-days, how much will he drink in one half-day?

17. If a butcher pays 12 dollars for 3 sheep, how much is that a head?

18. If three hats cost 9 dollars, how much will one hat cost?

19. If a man earns 12 dollars in 3 weeks, how much will he earn in one week?

20. There are 15 cents in 3 half-dimes; how many cents in 1 half-dime?

21. There are 18 single things in 3 half-dozens; how many single things in one half-dozen?

22. There are 21 days in three weeks; how many days in one week?

## LESSON VII.

## \*WRITTEN EXERCISES,

In which each partial Dividend is not a multiple of the Divisor.

(36)	(37)	(38)	(39)	(40)
$3)4363093$	$3)703600993$	$3)160960309$	$3)73069306$	$3)10369306$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(41)	(42)	(43)	(44)	(45)
$3)73609936$	$3)160360309$	$3)136091369$	$3)19690039$	$3)139609096$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(46)	(47)	(48)	(49)	(50)
$3)13700916$	$3)439066909$	$3)136099130$	$3)43399096$	$3)3966093$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

## LESSON VIII.

(51)	(52)	(53)	(54)	(55)
$2)15799339$	$2)1357957$	$2)351795$	$2)537955$	$2)3152765$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(56)	(57)	(58)	(59)	(60)
$2)31579399$	$2)53135799$	$2)31579771$	$2)3579135$	$2)35151714$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

(61)	(62)	(63)	(64)	(65)
$2)3579557$	$2)135317935$	$2)35179573$	$2)35719185$	$2)5379375$
<hr/>	<hr/>	<hr/>	<hr/>	<hr/>

\* NOTE FOR THE TEACHER.—The teacher should take occasion to explain the method of dividing when each figure is not a multiple, before requiring the performance of these exercises

## LESSON IX.

TABLE.

4 in 4, once.	4 in 20, 5 times.	4 in 36, 9 times.
4 in 8, twice.	4 in 24, 6 times.	4 in 40, 10 times.
4 in 12, 3 times.	4 in 28, 7 times.	4 in 44, 11 times.
4 in 16, 4 times.	4 in 32, 8 times.	4 in 48, 12 times.

*Table Exercise.*

1 is 0 times 4 and 1 over.	$10 \div 4 = ?$	$11 \div 4 = ?$	<i>etc.</i>
2 is 0 times 4 and 2 over.	$20 \div 4 = ?$	$21 \div 4 = ?$	<i>etc.</i>
3 is 0 times 4 and 3 over.	$30 \div 4 = ?$	$31 \div 4 = ?$	<i>etc.</i>
5 is once 4 and 1 over.	$40 \div 4 = ?$	$41 \div 4 = ?$	<i>etc.</i>
6 is once 4 and 2 over.	$50 \div 4 = ?$	$51 \div 4 = ?$	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

4)14	21	23	22	25	17	26	19	27	18	29	15
—	—	—	—	—	—	—	—	—	—	—	—

(2)

4)30	37	45	38	39	33	41	35	42	34	43	31
—	—	—	—	—	—	—	—	—	—	—	—

## LESSON X.

## MENTAL EXERCISES.

1. At 4 cents a yard how many yards of ribbon may be bought for 20 cents?

\* SOLUTION.—If 1 yard of ribbon can be bought for 4 cents, as many yards can be bought for 20 cents, as 4 cents are contained times in 20 cents, which are 5.

Therefore, if 1 yard of ribbon can be bought for 4 cents, 5 yards can be bought for 20 cents.

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\* NOTE FOR THE TEACHER.—The teacher should not fail to explain to the pupils the difference between the two forms of Division—the one which divides the Dividend into as many parts as there are units in the Divisor, (see Lesson II. and VI., Section V.,) and the other, which subtracts the Divisor from the Dividend a certain number of times, (see Introduction.) Let particular attention be given to the difference between the forms of solution

2. At 4 dollars a yard how many yards of broadcloth can be bought for 12 dollars? for 16 dollars? for 32 dollars? for 28 dollars?

3. At 4 cents a piece how many pieces of tape can be bought for 20 cents? for 8 cents? for 40 cents? for 48 cents?

4. I have 40 melons; how many baskets will they fill if I can put only 4 melons in a basket?

5. I have 40 dollars; how many boys can I hire if I give each boy 4 dollars?

6. In 4 pecks there is one bushel; how many bushels in 36 pecks? in 44 pecks? in 48 pecks? in 16 pecks?

7. In 4 quarts there is one gallon; how many gallons in 24 quarts? in 28 quarts? in 32 quarts?

8. How many pounds of rice can I buy for 36 cents at 4 cents per pound?

9. How many pencils can I buy for 40 cents at 4 cents apiece?

### LESSON XI.

#### WRITTEN EXERCISES.

In which each figure of the Dividend may or may not be a multiple of the Divisor.

66. Divide 3418067803 by 2, by 3, by 4.

67. Divide 6780346783 by 2, by 3, by 4.

68. Divide 460780346 by 2, by 3, by 4.

69. Divide 418786437 by 2, by 3, by 4.

70. Divide 416078341 by 2, by 3, by 4.

71. Divide 62413724 by 2, by 3, by 4.

## LESSON XII.

72. I have 327 oranges, and sell 311; how many remain? How much shall I receive at 8 cents each? If I divide the money among 4 little boys; how much will each have?

73. At 2 cents each how many apples can I buy for 4344 cents? How many peaches at 3 cents each? How many oranges at 4 cents each?

74. At 2 dollars a day how many days work can I hire for 346 dollars? For 496 dollars? For 3176 dollars?

75. At 3 cents a yard how many yards of tape can I buy for 384 cents? For 573 cents? For 4962 cents?

76. There are 4 pecks in a bushel; how many pecks in 3844 bushels? In 7688 bushels? In 15376 bushels?

77. There are 4 quarts in a gallon; how many gallons in 132 quarts? In 396 quarts? In 792 quarts?

78. How many pounds of rice, at 4 cents a pound, can I buy for 3672 cents? For 7344 cents? For 14688 cts.?

79. How many hats can be bought at 4 dollars apiece for 64 dollars? For 192 dollars? For 1152 dollars?

80. There are 3 feet in 1 yard; how many feet in 27 yards? In 16 yards? In 29 yards?

81. In 3 feet there is 1 yard; how many yards in 69 feet? In 276 feet? In 828 feet?

82. If 4 cannon balls weigh 108 pounds, how much will one of the balls weigh? If 3 weigh 108 pounds? If 4 weigh 388 pounds?

83. If 4 poles of equal length measure 44 feet, what is the length of each of the poles? If they measure 132? If they measure 264 feet?

## LESSON XIII.

TABLE.

5 in 5, once.	5 in 25, 5 times.	5 in 45, 9 times.
5 in 10, twice.	5 in 30, 6 times.	5 in 50, 10 times.
5 in 15, 3 times.	5 in 35, 7 times.	5 in 55, 11 times.
5 in 20, 4 times.	5 in 40, 8 times.	5 in 60, 12 times.

*Table Exercise.*

1 is 0 times 5 and 1 over.	10 ÷ 5; 11 ÷ 5; 12 ÷ 5; etc.
2 is 0 times 5 and 2 over.	20 ÷ 5; 21 ÷ 5; 22 ÷ 5; etc.
3 is 0 times 5 and 3 over.	30 ÷ 5; 31 ÷ 5; 32 ÷ 5; etc.
4 is 0 times 5 and 4 over.	40 ÷ 5; 41 ÷ 5; 42 ÷ 5; etc.
6 is once 5 and 1 over. etc.	50 ÷ 5; 51 ÷ 5; 52 ÷ 5; etc. etc. etc. etc.

## BLACKBOARD EXERCISES.

(1)

5)17	24	23	26	22	27	18	28	21	29	19	31	16
—	—	—	—	—	—	—	—	—	—	—	—	—

(2)

5)32	41	39	42	38	43	34	46	37	44	36	47	33
—	—	—	—	—	—	—	—	—	—	—	—	—

## LESSON XIV.

## MENTAL EXERCISES.

1. How many barrels of flour at 5 dollars a barrel can you buy for 10 dollars?

SOLUTION.—(See solution, Lesson X., Section V.)

2. How many rows of pegs will be wanted to hang up 20 hats, if 5 hats are hung in each row?

3. How many quarts of vinegar can be bought for 15 cents, if 1 quart costs 5 cents?

4. How many quarts of milk can be bought for 25 cents, when milk is 5 cents a quart?



5. At 5 shillings a pound how many pounds of tea can be bought for 60 shillings?

6. At 5 cents a bunch how many bunches of tooth-picks can be purchased for 35 cents?

7. At 5 cents apiece how many tops can I buy for 10 cents?

8. How many five-cent pieces are required to make 25 cents or a quarter dollar? How many cents in a quarter dollar?

9. How many five-cent pieces are required to make one dime or 10 cents? How many cents in one dime?

10. At 5 dollars a barrel how many barrels of flour can I buy for 15 dollars?

11. At 5 dollars a pair how many pairs of boots can I buy for 30 dollars? for 60 dollars? for 45 dollars?

12. I have 50 dollars to lay out in vests at 5 dollars apiece; how many can I buy?

13. I have 55 dollars to lay out in sheep at 5 dollars a head; how many can I buy?

14. A merchant had a piece of broadcloth containing 40 yards, which he wished to make into boys' suits, each suit to contain 5 yards; how many coats could he make?

15. 5 pieces of tape cost 20 cents; how much did one of the pieces cost?

16. On 5 pages of print there are 60 mistakes; how many mistakes on one of the pages?

17. In 5 days I pay 55 cents for milk; how much is that a day?

18. How much will 8 apples cost at 3 cents apiece?

19. If I have 8 apples and give away 3, how many will I have left?

20. If I have 8 apples and my mother gives me 8 more, how many shall I then have?

21. John had 3 apples, then he gave away 2, his mother then gave him 7; how many did he then have?

## LESSON XV.

## WRITTEN EXERCISES.

- 84. Divide 3678304 by 2, by 3, by 4, by 5.
- 85. Divide 41676713 by 2, by 3, by 4, by 5.
- 86. Divide 6786783 by 2, by 3, by 4, by 5.
- 87. Divide 5678376 by 2, by 3, by 4, by 5.
- 88. Divide 4786894 by 2, by 3, by 4, by 5.
- 89. Divide 4167183 by 2, by 3, by 4, by 5.
- 90. Divide 4186713 by 2, by 3, by 4, by 5.
- 91. Divide 3718671 by 2, by 3, by 4, by 5.
- 92. Divide 4100671 by 2, by 3, by 4, by 5.
- 93. Divide 418767 by 2, by 3, by 4, by 5.

## LESSON XVI.

- 94. Divide 4867183 by 2, by 3, by 4, by 5.
- 95. Divide 67183714 by 2, by 3, by 4, by 5.
- 96. Divide 4178634 by 2, by 3, by 4, by 5.
- 97. Divide 6783867 by 2, by 3, by 4, by 5.
- 98. Divide 4067867 by 2, by 3, by 4, by 5.
- 99. Divide 6703406 by 2, by 3, by 4, by 5.
- 100. Divide 4678370 by 2, by 3, by 4, by 5.
- 101. Divide 61011032 by 2, by 3, by 4, by 5.
- 102. Divide 67834101 by 2, by 3, by 4, by 5.
- 103. Divide 4186783 by 2, by 3, by 4, by 5.

## LESSON XVII.

TABLE.

6 in 6, once.	6 in 30, 5 times.	6 in 54, 9 times.
6 in 12, twice.	6 in 36, 6 times.	6 in 60, 10 times.
6 in 18, 3 times.	6 in 42, 7 times.	6 in 66, 11 times.
6 in 24, 4 times.	6 in 48, 8 times.	6 in 72, 12 times.

*Table Exercise.*

1 is 0	6 and 1 over.	10 ÷ 6;	11 ÷ 6;	12 ÷ 6;	13 ÷ 6; etc.
2 is 0	6 and 2 over.	20 ÷ 6;	21 ÷ 6;	22 ÷ 6;	23 ÷ 6; etc.
3 is 0	6 and 3 over.	30 ÷ 6;	31 ÷ 6;	32 ÷ 6;	33 ÷ 6; etc.
4 is 0	6 and 4 over.	40 ÷ 6;	41 ÷ 6;	42 ÷ 6;	43 ÷ 6; etc.
5 is 0	6 and 5 over.	50 ÷ 6;	51 ÷ 6;	52 ÷ 6;	53 ÷ 6; etc.
	etc.	etc.	etc.	etc.	etc.

## BLACKBOARD EXERCISES.

(1)

6) 16 25 23 27 22 26 19 28 21 29 20 31 17  
 — — — — — — — — — — — — —

(2)

6) 32 40 39 41 38 43 34 45 37 44 35 46 33  
 — — — — — — — — — — — — —

## LESSON XVIII.

## MENTAL EXERCISES.\*

1. If 6 sheets of paper make a copy-book, how many books will 12 sheets make?
2. If one yard of broadcloth costs 6 dollars, how many yards can be bought for 30 dollars?
3. If 5 yards of broadcloth costs 30 dollars, what will 1 yard cost?
4. If a man travels six miles in one hour, how many

\* NOTE. —The teacher should be careful and require the appropriate solution for each example.

hours will it take him to travel 12 miles? 72 miles? 54 miles?

5. If it takes a man 7 hours to travel 42 miles, how far does he travel in one hour?

6. If it take 1 man 6 hours to do a piece of work, how long will it take 6 men?

7. If it take 1 man 60 hours to do a piece of work, how long will it take 6 men?

8. If 1 man can dig 40 rods of ditch in 72 hours, how long will it take 6 men?

9. If 6 men can dig 42 rods of ditch in 12 hours, how many rods can 1 man dig, working at the same rate?

10. If 6 men can eat a tub of butter weighing 54 pounds, in 36 days, how many pounds at the same rate would one man eat in the same time?

11. 6 men can mow 36 acres of grass in 6 days; working at the same rate how many acres can one man mow?

12. If a yard of ribbon costs 6 cents, how many yards can be bought for 30 cents? for 42 cents? for 48 cents? for 18 cents?

13. If a pound of rice costs 5 cents, how many pounds can be purchased for 60 cents? for 85 cents? for 35 cents?

14. If a pound of lard costs 6 cents, how many pounds can be purchased for 12 cents? for 54 cents? for 66 cents?

15. If 1 bushel of potatoes cost 6 shillings, how many bushels can be bought for 72 shillings? for 30 shillings? for 24 shillings? for 18 shillings?

16. 18 are how many times 6? 3? 2? 8? 5? 4?  
1? 9? 7? 11? 12?

## LESSON XIX.

## WRITTEN EXERCISES.

104. Divide 41876834 by 3, by 4, by 5, by 6.
105. Divide 37078642 by 3, by 4, by 5, by 6.
106. Divide 40783742 by 3, by 4, by 5, by 6.
107. Divide 4178683 by 3, by 4, by 5, by 6.
108. Divide 3070800 by 3, by 4, by 5, by 6.
109. Divide 4187864 by 3, by 4, by 5, by 6.
110. Divide 3718642 by 3, by 4, by 5, by 6.
111. Divide 4078672 by 3, by 4, by 5, by 6.
112. Divide 3704062 by 3, by 4, by 5, by 6.
113. Divide 41307864 by 3, by 4, by 5, by 6.
114. Divide 30710670 by 3, by 4, by 5, by 6.
115. Divide 40701234 by 3, by 4, by 5, by 6.

## LESSON XX.

116. Divide 3070423 by 3, by 4, by 5, by 6.
117. Divide 3407680 by 3, by 4, by 5, by 6.
118. Divide 4107068 by 3, by 4, by 5, by 6.
119. Divide 4187067 by 3, by 4, by 5, by 6.
120. Divide 4087683 by 3, by 4, by 5, by 6.
121. Divide 3496721 by 3, by 4, by 5, by 6.
122. Divide 4257432 by 3, by 4, by 5, by 6.
123. Divide 4132056 by 3, by 4, by 5, by 6.
124. Divide 3247961 by 3, by 4, by 5, by 6.
125. Divide 3798765 by 3, by 4, by 5, by 6.
126. Divide 4207902 by 3, by 4, by 5, by 6.
127. Divide 2142746 by 3, by 4, by 5, by 6.
128. Divide 3579035 by 3, by 4, by 5, by 6.

## LESSON XXI.

TABLE.

7 in 7, once.	7 in 35, 5 times.	7 in 63, 9 times.
7 in 14, twice.	7 in 42, 6 times.	7 in 70, 10 times.
7 in 21, 3 times.	7 in 49, 7 times.	7 in 77, 11 times.
7 in 28, 4 times.	7 in 56, 8 times.	7 in 84, 12 times.

*Table Exercise.*

10 ÷ 7;	11 ÷ 7;	12 ÷ 7;	13 ÷ 7;	14 ÷ 7;	15 ÷ 7; etc.
20 ÷ 7;	21 ÷ 7;	22 ÷ 7;	23 ÷ 7;	24 ÷ 7;	25 ÷ 7; etc.
30 ÷ 7;	31 ÷ 7;	32 ÷ 7;	33 ÷ 7;	34 ÷ 7;	35 ÷ 7; etc.
40 ÷ 7;	41 ÷ 7;	42 ÷ 7;	43 ÷ 7;	44 ÷ 7;	45 ÷ 7; etc.
50 ÷ 7;	51 ÷ 7;	52 ÷ 7;	53 ÷ 7;	54 ÷ 7;	55 ÷ 7; etc.
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>

## BLACKBOARD EXERCISES.

(1)

7)23	31	29	32	30	33	25	36	27	34	26	37	24
—	—	—	—	—	—	—	—	—	—	—	—	—

(2)

7)38	45	43	48	44	47	40	46	42	50	41	51	39
—	—	—	—	—	—	—	—	—	—	—	—	—

## LESSON XXII.

## MENTAL EXERCISES.

1. If 7 sheets of paper make 1 copy-book, how many books can be made from 49 sheets? 56 sheets? 70 sheets?

2. If 7 boys carry 63 pounds, how many pounds does one of the boys carry?

3. How many boys will it take to carry 63 pounds, if one boy can carry only 7 pounds?

4. If there are 7 sevenths in one unit, how many units in 14 sevenths?

5. If I have 77 sevenths of an apple, to how many boys can I give 7 sevenths of an apple each?

6. If I have 21 ninths of an orange, to how many girls can I give 7 ninths of an orange each?

7. There are 7 sevenths in a unit; how many units in 72 sevenths?

8. One man can do a certain piece of work in 35 days; how many days will 7 men require to perform the same work?

8. 7 yards of cloth cost 28 cents; what will 1 yard cost?

#### LESSON XXIII.

##### WRITTEN EXERCISES.

129. Divide 40780641 by 4, by 5, by 6, by 7.

130. Divide 3070346 by 4, by 5, by 6, by 7.

131. Divide 30704261 by 4, by 5, by 6, by 7.

132. Divide 4070673 by 4, by 5, by 6, by 7.

133. Divide 3708641 by 4, by 5, by 6, by 7.

134. Divide 30786043 by 4, by 5, by 6, by 7.

135. Divide 4070834 by 4, by 5, by 6, by 7.

136. Divide 30708642 by 4, by 5, by 6, by 7.

137. Divide 89180034 by 4, by 5, by 6, by 7.

138. Divide 60789019 by 4, by 5, by 6, by 7.

139. Divide 39680723 by 4, by 5, by 6, by 7.

140. Divide 37418679 by 4, by 5, by 6, by 7.

141. Divide 54786344 by 4, by 5, by 6, by 7.

## LESSON XXIV.

142. At 7 cents apiece how many pints of peanuts can I buy for 56 cents? For 1134 cents? For 2268 cents? For 4536 cents?

143. At 5 shillings a pound how many pounds of tea can I buy for 65 shillings? For 195 shillings? For 585 shillings? For 1170 shillings?

144. At 6 cents apiece how many tops can I buy for 72 cents? For 504 cents? For 1512 cents? For 144?

145. I have 648 dollars with which to buy sheep; how many can I buy at 2 dollars a head? At 4 dollars? At 6 dollars? At 3 dollars?

146. 7 pieces of broadcloth cost 448 dollars, what did one of the pieces cost? What did two of them cost? What did three of them cost? What did four cost?

147. 6 pieces of tape contain 336 yards; what does one piece contain? 2 contain? 3 contain? 4 contain?

148. Five barrels of flour are worth 65 dollars; what is the value of 1 barrel? Of 2 barrels? Of 3 barrels? Of 4 barrels?

149. Seven books cost 399 cents; what did 1 book cost? What the cost of 2 books? Of 3 books? Of 4 books?

150. One tub of butter weighs 54 pounds; at the same rate what will 3 tubs weigh? What will 4 tubs weigh? 6 tubs? 7 tubs?

151. Six houses cost 4326 dollars; what did 1 cost? What did 2 cost? What did 5 cost? What did 7 cost?

152. Six stores cost 8622 dollars; what did 1 cost? What did 2 cost? What did 3 cost? What did 4 cost?

153. If one pound of lard is worth 6 cents, what are 374 pounds worth? 867 pounds? 913 pounds? 713 pounds?



## LESSON XXV.

TABLE.

8 in 8, once.	8 in 40, 5 times	8 in 72, 9 times.
8 in 16, twice.	8 in 48, 6 times	8 in 80, 10 times.
8 in 24, 3 times.	8 in 56, 7 times	8 in 88, 11 times.
8 in 32, 4 times.	8 in 64, 8 times	8 in 96, 12 times.

*Table Exercise.*

10 ÷ 8;	11 ÷ 8;	12 ÷ 8;	13 ÷ 8;	14 ÷ 8;	15 ÷ 8;	<i>etc.</i>
20 ÷ 8;	21 ÷ 8;	22 ÷ 8;	23 ÷ 8;	24 ÷ 8;	25 ÷ 8;	<i>etc.</i>
30 ÷ 8;	31 ÷ 8;	32 ÷ 8;	33 ÷ 8;	34 ÷ 8;	35 ÷ 8;	<i>etc.</i>
40 ÷ 8;	41 ÷ 8;	42 ÷ 8;	43 ÷ 8;	44 ÷ 8;	45 ÷ 8;	<i>etc.</i>
50 ÷ 8;	51 ÷ 8;	52 ÷ 8;	53 ÷ 8;	54 ÷ 8;	55 ÷ 8;	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.\*

(1)

8)23	33	30	31	29	34	26	35	28	36	27
—	—	—	—	—	—	—	—	—	—	—

(2)

8)38	46	45	47	44	49	41	51	43	50	42
—	—	—	—	—	—	—	—	—	—	—

(3)

8)53	61	60	63	59	62	55	65	58	66	57
—	—	—	—	—	—	—	—	—	—	—

(4)

8)68	76	75	77	74	82	70	78	73	79	71
—	—	—	—	—	—	—	—	—	—	—

## LESSON XXVI.

## MENTAL EXERCISES.

1. At 8 cents apiece, how many cocoa-nuts can you buy for 16 cents? for 24 cents? 64 cents? 72 cents?

\* NOTE.—The teacher should not fail to require that these blackboard exercises be thoroughly learned.

2. If 8 pine-apples cost 96 cents, what will one pine-apple cost?

3. If you have 48 cents to spend for grapes, how many bunches can you buy at 8 cents a bunch?

4. If a master-workman have 56 dollars to divide equally among his 8 journeymen, how many dollars will each journeyman receive?

5. There are 64 scholars in a school; how many benches will they occupy if 8 sit on a bench?

6. A store-keeper promised to divide 72 walnuts equally among 8 children, if they could tell him how many nuts each must receive; what should be the reply?

7. In a certain time 8 soldiers can eat 88 pounds of bread; how many pounds, at that rate, can one soldier eat?

8. 8 men can dig 96 bushels of potatoes in a day; how many bushels can one man dig?

9. During a certain battle, 8 soldiers fired 72 balls at the enemy; how many balls did one soldier fire?

10. Before the surrender of a certain fort, 96 cartridges were equally divided among 8 soldiers; and as they were not permitted to use them, how many had each when they surrendered?

11. 8 soldiers received 16 pairs of stockings to be equally divided among them; how many pairs did each receive?

12. In 8 quarts there is 1 peck; how many pecks in 24 quarts? in 40 quarts? in 48 quarts? 64 quarts?

13. In 8 eighths there is 1 unit; how many units in 80 eighths? in 88 eighths? in 8 eighths?

## LESSON XXVII.

## WRITTEN EXERCISES.

154. Divide 407068342 by 5, by 6, by 7, by 8.
155. Divide 302416702 by 5, by 6, by 7, by 8.
156. Divide 401000410 by 5, by 6, by 7, by 8.
157. Divide 41070602 by 5, by 6, by 7, by 8.
158. Divide 41307064 by 5, by 6, by 7, by 8.
159. Divide 4034061 by 5, by 6, by 7, by 8.
160. Divide 30708607 by 5, by 6, by 7, by 8.
161. Divide 40706834 by 5, by 6, by 7, by 8.
162. Divide 94196013 by 5, by 6, by 7, by 8.
163. Divide 36709062 by 5, by 6, by 7, by 8.
164. Divide 53021169 by 5, by 6, by 7, by 8.
165. Divide 33410864 by 5, by 6, by 7, by 8.
166. Divide 70370864 by 5, by 6, by 7, by 8.

## LESSON XXVIII.

167. Divide 4167086 by 5, by 6, by 7, by 8.
168. Divide 4078603 by 5, by 6, by 7, by 8.
169. Divide 3070642 by 5, by 6, by 7, by 8.
170. Divide 3070412 by 5, by 6, by 7, by 8.
171. Divide 34078602 by 5, by 6, by 7, by 8.
172. Divide 30702162 by 5, by 6, by 7, by 8.
173. Divide 4071862 by 5, by 6, by 7, by 8.
174. Divide 41860304 by 5, by 6, by 7, by 8.
175. Divide 83910670 by 5, by 6, by 7, by 8.
176. Divide 30404012 by 5, by 6, by 7, by 8.
177. Divide 35650456 by 5, by 6, by 7, by 8.
178. Divide 73096781 by 5, by 6, by 7, by 8.

## LESSON XXIX.

TABLE.

9 in 9, once.	9 in 45, 5 times.	9 in 81, 9 times.
9 in 18, twice.	9 in 54, 6 times.	9 in 90, 10 times.
9 in 27, 3 times.	9 in 63, 7 times.	9 in 99, 11 times.
9 in 36, 4 times.	9 in 72, 8 times.	9 in 108, 12 times.

*Table Exercise.*

$10 \times 9$ ;	$11 \times 9$ ;	$12 \times 9$ ;	$13 \times 9$ ;	$14 \times 9$ ;	$15 \times 9$ ;	<i>etc.</i>
$10 \div 9$ ;	$11 \div 9$ ;	$12 \div 9$ ;	$13 \div 9$ ;	$14 \div 9$ ;	$15 \div 9$ ;	<i>etc.</i>
$20 \times 9$ ;	$21 \times 9$ ;	$22 \times 9$ ;	$23 \times 9$ ;	$24 \times 9$ ;	$25 \times 9$ ;	<i>etc.</i>
$20 \div 9$ ;	$21 \div 9$ ;	$22 \div 9$ ;	$23 \div 9$ ;	$24 \div 9$ ;	$25 \div 9$ ;	<i>etc.</i>
$30 \times 9$ ;	$31 \times 9$ ;	$32 \times 9$ ;	$33 \times 9$ ;	$34 \times 9$ ;	$25 \times 9$ ;	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	

## BLACKBOARD EXERCISES.

(1)

9)42	50	49	52	48	51	44	53	47	55	46
—	—	—	—	—	—	—	—	—	—	—

(2)

9)57	65	64	66	62	67	59	68	61	69	60
—	—	—	—	—	—	—	—	—	—	—

(3)

9)71	79	77	80	78	82	74	83	76	84	75
—	—	—	—	—	—	—	—	—	—	—

(4)

9)86	94	93	95	91	96	88	97	92	98	89
—	—	—	—	—	—	—	—	—	—	—

## LESSON XXX.

## MENTAL EXERCISES.

1. If a steamship sails 9 miles an hour, how long will it take her to sail 36 miles? 9 miles? 18 miles?

2. A steamship can sail 54 miles in 9 hours; how many miles is that an hour?

3. If a man earn 9 dollars in a week, how many weeks must he work to earn 45 dollars? 108 dollars? 99 dollars?

4. If a boy earn 36 dollars in 9 weeks, how much does he earn in one week?

5. You wish to divide 54 dollars equally among 9 men; how much should each man receive?

6. If you have 72 dollars which you wish to divide equally among some poor persons, and you wish to give 9 dollars to each person, how many can share your bounty?

7. A soldier who was wounded in a certain battle, in 9 months received from the soldiers' fund 42 dollars; how much was that a month?

8. An officer who was wounded during the Mexican war, received in 9 weeks, from the Government, 108 dollars; how much was that per week?

9. If you have 90 lessons to get, and learn only 9 lessons a week, how many weeks will it take you to learn the whole?

10. If in 9 weeks you learn 99 lessons, how many is that a week?

11. If 9 yards of tape cost 18 cents, how much is that a yard?

12. If 9 yards of ribbon cost 27 cents, how much is that a yard?

13. At 9 cents a yard, how many yards of muslin can you buy for 63 cents? for 54 cents? for 45 cents?

## LESSON XXXI.

## WRITTEN EXERCISES,

179. Divide 41871864 by 6, by 7, by 8, by 9.  
180. Divide 4070304 by 6, by 7, by 8 by 9.  
181. Divide 490706 by 6, by 7, by 8, by 9.  
182. Divide 30780467 by 6, by 7, by 8, by 9.  
183. Divide 37080670 by 6, by 7, by 8, by 9.  
184. Divide 41830883 by 6, by 7, by 8, by 9.  
185. Divide 37086420 by 6, by 7, by 8, by 9.  
186. Divide 41708678 by 6, by 7, by 8, by 9.  
187. Divide 53176083 by 6, by 7, by 8, by 9.  
188. Divide 15387560 by 6, by 7, by 8, by 9.  
189. Divide 36489615 by 6, by 7, by 8, by 9.  
190. Divide 63190358 by 6, by 7, by 8, by 9.  
191. Divide 98765432 by 6, by 7, by 8, by 9.

## LESSON XXXII.

192. Divide 38078642 by 6, by 7, by 8, by 9.  
193. Divide 40178067 by 6, by 7, by 8, by 9.  
194. Divide 30708684 by 6, by 7, by 8, by 9.  
195. Divide 40370842 by 6, by 7, by 8, by 9.  
196. Divide 307086021 by 6, by 7, by 8, by 9.  
197. Divide 4012678 by 6, by 7, by 8, by 9.  
198. Divide 3070864 by 6, by 7, by 8, by 9.  
199. Divide 30418764 by 6, by 7, by 8, by 9.  
200. Divide 204785063 by 6, by 7, by 8, by 9.  
201. Divide 380154732 by 6, by 7, by 8, by 9.  
202. Divide 123356789 by 6, by 7, by 8, by 9.  
203. Divide 987654821 by 6, by 7, by 8, by 9.

## LESSON XXXIII.

TABLE.

10	in	0,	0	time.	11	in	0,	0	time.
10	in	10,	1	time.	11	in	11,	1	time.
10	in	20,	2	times.	11	in	22,	2	times.
10	in	30,	3	times.	11	in	33,	3	times.
10	in	40,	4	times.	11	in	44,	4	times.
10	in	50,	5	times.	11	in	55,	5	times.
10	in	60,	6	times.	11	in	66,	6	times.
10	in	70,	7	times.	11	in	77,	7	times.
10	in	80,	8	times.	11	in	88,	8	times.
10	in	90,	9	times.	11	in	99,	9	times.
10	in	100,	10	times.	11	in	110,	10	times.
10	in	110,	11	times.	11	in	121,	11	times.
10	in	120,	12	times.	11	in	132,	12	times.

## BLACKBOARD EXERCISES.

(1)

10)10	109	54	119	65	116	32	112	76	98
—	—	—	—	—	—	—	—	—	—

(2)

11)12	19	18	20	17	31	14	32	16	34	15
—	—	—	—	—	—	—	—	—	—	—

(3)

11)36	45	42	43	41	46	38	47	40	49	39
—	—	—	—	—	—	—	—	—	—	—

(4)

11)60	68	67	69	65	70	62	71	64	72	63
—	—	—	—	—	—	—	—	—	—	—

## LESSON XXXIV.

## MENTAL EXERCISES,

In Multiplication and Division.\*

1. If 1 yard of ribbon costs 10 cents, what will 5 yards cost? 7 yards? 9 yards? 11 yards? 4 yards?

\* NOTE FOR THE TEACHER.—The teacher should be careful to require the appropriate solution for each example.

2. If one yard of ribbon costs 10 cents, how many yards can I buy for 50 cents? for 80 cents? for 120 cents?

3. If 7 yards of ribbon cost 80 cents, how much does one yard cost?

4. If 10 men can cut 20 cords of wood in 2 days, how many cords can 1 man cut?

5. If it takes 10 men 2 days to cut 20 cords of wood, how long will it take 1 man to cut the same amount?

6. If it takes 10 men 2 days to cut 20 cords of wood, how many men will it require to cut it in 1 day?

7. If 11 men can mow 55 acres in 5 weeks, how much can 1 man mow in 5 weeks?

8. If 11 men can mow 55 acres in 5 weeks, how long will it take 1 man to mow it?

9. If 11 men can mow 55 acres in 5 weeks, how many men will be required to mow it in 1 week?

10. If 11 men can eat 66 pounds of flour in 7 weeks, how long will it take 1 man to eat it?

11. If 11 men can eat 66 pounds of flour in 7 weeks, how many pounds can one man eat in the same time?

12. If 11 men can eat 66 pounds of flour in 7 weeks, how many men will be required to eat it in 1 week?

13. If 11 men can earn 88 dollars in 9 weeks, how much can 1 man earn in the same time?

14. If 11 men can earn 88 dollars in 9 weeks, how long will it take 1 man to earn the same amount?

15. If 11 men can earn 88 dollars in 9 weeks, how many men will be required to earn it in 1 week?

16. If 1 man can earn 8 dollars in a week, how many weeks will it take him to earn 88 dollars?



## LESSON XXXV.

## WRITTEN EXERCISES.

204. Divide 1678041864 by 11, by 12, by 13, by 14.  
 205. Divide 1867830142 by 11, by 12, by 13, by 14.  
 206. Divide 37864134 by 12, by 13, by 14, by 15.  
 207. Divide 40708646 by 12, by 13, by 14, by 15.  
 208. Divide 40756413 by 13, by 14, by 15, by 16.  
 209. Divide 30786412 by 14, by 15, by 16, by 17.  
 210. Divide 9404603 by 15, by 16, by 17, by 18.  
 211. Divide 7360421 by 16, by 17, by 18, by 19.  
 212. Divide 5384671 by 17, by 18, by 19, by 20.  
 213. Divide 3468402 by 18, by 19, by 20, by 21.  
 214. Divide 4186302 by 19, by 20, by 21, by 22.  
 215. Divide 4860960 by 20, by 21, by 22, by 23.  
 216. Divide 4083786 by 21, by 22, by 23, by 24.

## LESSON XXXVII.

217. Divide 407864163 by 22, by 23, by 24, by 25.  
 218. Divide 307864187 by 24, by 25, by 26, by 27.  
 219. Divide 416780712 by 26, by 27, by 28, by 29.  
 220. Divide 417083416 by 28, by 29, by 30, by 31.  
 221. Divide 341816412 by 30, by 31, by 32, by 33.  
 222. Divide 341783215 by 32, by 33, by 34, by 35.  
 223. Divide 497826427 by 35, by 36, by 37, by 38.  
 224. Divide 341864938 by 39, by 40, by 41, by 42.  
 225. Divide 596782673 by 43, by 44, by 45, by 46.  
 226. Divide 494187684 by 47, by 48, by 49, by 50.  
 227. Divide 769689034 by 53, by 55, by 58, by 60.  
 228. Divide 941856372 by 65, by 68, by 70, by 75.  
 229. Divide 134670364 by 83, by 88, by 95, by 98.

## LESSON XXXVII.

TABLE.

12 in 12, once.	12 in 60, 5 times.	12 in 108, 9 times.
12 in 24, twice.	12 in 72, 6 times.	12 in 120, 10 times.
12 in 36, 3 times.	12 in 84, 7 times.	12 in 132, 11 times.
12 in 48, 4 times.	12 in 96, 8 times.	12 in 144, 12 times.

*Table Exercise.*

10 + 9;	11 + 9;	12 + 9;	13 + 9;	14 + 9;	<i>etc.</i>
10 — 9;	11 — 9;	12 — 9;	13 — 9;	14 — 9;	<i>etc.</i>
10 × 9;	11 × 9;	12 × 9;	13 × 9;	14 × 9;	<i>etc.</i>
10 ÷ 9;	11 ÷ 9;	12 ÷ 9;	13 ÷ 9;	14 ÷ 9;	<i>etc.</i>
20 + 9;	21 + 9;	22 + 9;	23 + 9;	24 + 9;	<i>etc.</i>
<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>	<i>etc.</i>

## BLACKBOARD EXERCISES.

(1)

12)51	58	57	59	56	61	53	62	55	63	54
—	—	—	—	—	—	—	—	—	—	—

(2)

12)65	73	74	71	70	75	67	76	69	77	68
—	—	—	—	—	—	—	—	—	—	—

(3)

12)79	87	86	88	85	89	81	90	83	91	82
—	—	—	—	—	—	—	—	—	—	—

(4)

12)93	101	100	99	103	95	104	98	105	97
—	—	—	—	—	—	—	—	—	—

## LESSON XXXVIII.

## MENTAL EXERCISES,

In Multiplication and Division.

1. If 12 horses can draw 24 tons of hay, how many tons can one horse draw?

2. If 1 horse can draw 2 tons of hay, how many tons can 12 horses draw?

3. At 12 dollars a ton, how many tons of hay can 1 buy for 48 dollars?

4. If I have 96 dollars, how many tons of hay can I buy at 12 dollars a ton?

5. 12 tons of hay cost 144 dollars; how much did one ton cost?

6. If 1 ton of hay costs 11 dollars, how much will 12 tons cost?

7. If 12 soldiers ate 48 pounds of meat in 12 meals, how many pounds of meat did 1 of the soldiers eat in the same number of meals?

8. If 48 pounds of meat will last 12 soldiers 12 meals, how many meals will it last 1 soldier?

9. If 12 soldiers ate 48 pounds of meat in 12 meals, how many pounds would they eat at 1 meal?

10. If for 12 meals 12 soldiers have 48 pounds of meat equally divided among them, how many pounds will each receive?

11. Sixty blankets were distributed equally among 12 Indians; how many blankets did each Indian receive?

12. If a ship sail 12 miles an hour, how many miles will she sail in 11 hours? 9 hours? 7 hours?

13. If a ship sail 12 miles an hour, how many hours will it take her to sail 84 miles? 48 miles? 60 miles? 86 miles? 132 miles?

14. If 1 cord of wood is worth 12 shillings, how many shillings will 7 cords be worth? 6 cords? 3 cords?

15. 3 times 4 are how many times 2? 6? 9? 4? 3? 8?

## LESSON XXXIX.

## WRITTEN EXERCISES.

230. Divide 40708302 by 99, by 109, by 209, by 211.

231. Divide 3078643 by 200, by 207, by 217, by 297.

232. Divide 4070864 by 301, by 308, by 329, by 389.

✓ 233. Divide 30460780 by ~~401~~, by ~~437~~, by ~~463~~, by ~~478~~.

234. Divide 4070340 by ~~500~~, by ~~538~~, by 507, by ~~588~~.

✓ 235. Divide 3087864 by ~~660~~, by ~~675~~, by 611, by 625.

✓ 236. Divide 3498347 by ~~721~~, by ~~637~~, by ~~686~~, by ~~675~~.

237. Divide 3678416 by 829, by 808, by 897, by 857.

238. Divide 4189674 by 960, by 950, by 968, by 940.

239. Divide 3783641 by 864, by 784, by 683, by 404.

240. Divide 6467834 by 913, by 683, by 407, by 306.

241. Divide 1867834 by 914, by 867, by 537, by 409.

242. Divide 3868347 by 630, by 807, by 570, by 308.

## LESSON XL.

243. Divide 4070864 by 86, by 68, by 100, by 1001.

244. Divide 3070842 by 10, by 20, by 30, by 1000.

245. Divide 4030702 by 40, by 50, by 60, by 4000.

246. Divide 406703 by 25, by 70, by 80, by 5005.

247. Divide 3070864 by 30, by 90, by 76, by 6060.

248. Divide 4070041 by 43, by 67, by 83, by 7007.

249. Divide 467834 by 39, by 67, by 94, by 8080.

250. Divide 738416 by 37, by 44, by 67, by 5099.

251. Divide 874034 by 69, by 12, by 29, by 3907.

252. Divide 537068 by 76, by 87, by 95, by 8406.

253. Divide 708064 by 99, by 88, by 77, by 9009.

254. Divide 307806 by 66, by 55, by 44, by 9876.

## LESSON XLI.

## MISCELLANEOUS MENTAL EXERCISES.

1. There were 9 apples on the table, and Charles took 8 of them; how many remained?

2. If 1 apple is worth 2 cents, how much will 12 apples be worth? 7 apples? 5 apples?

3. Charles had 7 nuts, and his sister gave him 8 more; how many had he then?

4. Marcus bought a slate for 19 cents, and then sold it for 8 cents less than he gave for it; how much did he receive for it?

5. Henry bought a sled for 23 cents, and then sold it for 9 cents more than he gave for it; how much did he receive for it?

6. If 9 sheep are worth 108 dollars, how much is one of the sheep worth?

7. How much will 11 sheep cost, at 5 dollars a head?

8. If I have 17 sheep and lose 9, how many will I have left?

9. A boy had 7 cents, and his brother gave him 9 more; how many had he then?

10. A boy bought a slate for 10 cents; he gave the clerk a 25 cent postage-bill; how much change should he receive in return?

11. What will 7 pounds of raisins cost at 12 cents a pound? at 9 cents? at 11 cents? at 16 cents?

12. 7 hats cost 28 dollars; what did one of the hats cost?

13. I had 27 dollars, and gave 9 dollars to my sister; how many dollars had I left?

## LESSON XLII.

1. A boy had 27 marbles ; in playing he lost all but 9 ; how many did he lose ?

2. How many oranges at 6 cents apiece can you buy for 42 cents ? for 54 cents ? for 60 cents ? for 72 cents ?

3. A farmer pays 28 dollars for 7 sheep ; how much is that apiece ?

4. A trader wishes to pack 64 hats in boxes, and can put but 8 hats in a box ; how many boxes does he need ?

5. If a man can build 7 rods of fence in a day, how long will it take him to build 77 rods ?

6. What will 9 pounds of sugar cost, at 9 cents a pound ?

7. What is the cost of 12 pounds of tea, at 12 shillings a pound ?

8. John bought 9 pencils at 2 cents apiece ; how much did they cost him ?

9. I have a string 27 feet long ; how much will remain after I cut off 4 feet ?

10. There are 16 cows in the pasture ; John drove out 6 ; how many remained ?

11. Charles picked 13 bushels of apples, and George picked as many lacking 5 bushels ; how many did George pick ?

12. If 7 pigs cost 63 dollars, how much was that apiece ?

13. If 9 calves cost 72 dollars, how much was that apiece ?

14. How much will 7 coats cost at 12 dollars apiece ?

## LESSON XLI.

## MISCELLANEOUS WRITTEN EXERCISES.

255. A man had 5674 dollars; he paid to one man 1480 dollars, how much had he left? He paid to another 378 dollars; how much had he left? He lost 576 dollars; how much had he left? He had 1000 dollars stolen; how much finally remained?

256. What will 347 oranges cost at 2 cents each? At 6 cents each? At 9 cents each? At 8 cents each?

257. What will be the cost of 35 sheep at 7 dollars each? 27 cows at 26 dollars each; 57 horses at 137 dollars each?

258. Samuel shot two arrows in the same direction, one went 387 feet, the other 433 feet; how far were they apart?

259. He asked a little boy to get them; how much farther must he walk to bring the one than the other?

260. The bridge is 116 rods up the road from the school-house, the oak tree is 250 rods down the road; how far is the bridge from the oak tree?

261. The village mill is 680 rods from the school-house, two boys walked there and back; how many rods did they walk?

262. A merchant bought 347 yards of cloth at one time, 673 yards at another time, and 467 yards at another; how much did he buy in all?

263. If I travel 137 miles on one day, and 237 miles on the next day, how far will I travel in all?

264. I was 374 miles from home, on the next day I was 570 miles from home; which way and how far did I travel?

265. A little boy was 39 rods from the school-house, he walked 15 rods farther ; how far was he then from the school-house ?

266. A large boy threw a stone to the oak tree which was 632 feet up the road he then walked to the mill, which was 513 feet down the road ; how far was the mill from the oak tree ?

267. A man had two notes due him, one for 1374 dollars, the other for 347 dollars ; how much was due him in all ?

268. A piece of tape contained 38 yards ; John cut off 13 yards ; how many yards remained ?

269. A man bought a house and sold it for 3741 dollars, which was 341 dollars less than he gave for it ; how much did he give for it ?

270. Samuel gave 371 cents for some nuts, which is 211 cents less than they are worth ; how much are they worth ?

271. Samuel gave 371 cents for some melons, which is 211 cents more than they are worth ; what are they worth ?

272. A man bought a house for 1372 dollars, which is 376 dollars more than it is worth ; what is it worth ?

273. A man bought a house for 1372 dollars, which is 376 dollars less than it is worth ; what is it worth ?

274. I bought some sheep for 483 dollars, and some cows for 473 dollars ; how much more did the sheep cost than the cows ?

275. A man bought 396 bushels of corn ; all but 125 bushels were sunk in a boat ; how much was saved ?



276. Thomas Jones bought 576 bushels of wheat; his brother bought as many bushels, lacking 188 bushels; how many bushels did his brother buy?

277. What will 164 pairs of boots cost at 5 dollars a pair?

278. What is the value each of the following articles: 12 pounds of cheese at 16 cents a pound; 9 pounds of rice at 7 cents a pound; 12 pounds of raisins at 13 cents a pound?

279. What is the value of each of the following articles: 13 gallons of vinegar at 13 cents a gallon; 27 gallons of molasses at 36 cents a gallon; 25 gallons of oil at 37 cents a gallon?

280. There are 40 lines on one page, how many lines in a book of 375 pages?

281. Five hundred and sixty-eight cents is the cost of four books; what is the cost of one of the books?

282. Five boats carry 3765 pounds how much does one of the boats carry?

283. If one boat can carry 3765 pounds, how many pounds can five boats of the same size carry?

284. 378 pounds of sugar cost 3024 cents; how much is that a pound?

285. 496 bushels of wheat are worth 992 dollars; how much is that a bushel?

286. 5786 oranges cost 28930 cents; how much is that apiece?

287. 2692 cents were paid for 673 peaches; how much is that apiece?

288. In one pound there are 16 ounces; how many ounces in 437 pounds?

## SECTION VI.

## LESSON I.

## FEDERAL MONEY.

Federal Money is the currency of the United States.

The Denominations are eagles, dollars, dimes, cents, and mills.

The Coins are the eagle, half-eagle, quarter eagle, dollar, half-dollar, quarter-dollar, dime, half-dime, three-cent piece, two-cent piece, and cent.

TABLE.

10	mills (m.)	make	1	cent.	ct.
10	cents	make	1	dime.	d.
10	dimes	make	1	dollar.	¢.
10	dollars	make	1	eagle.	E.



Nickel.



Silver.



Silver.



Gold.



Gold.



Gold.

## LESSON II.

## MENTAL EXERCISES.

1. How many mills in 5 cents?

SOLUTION.—Since in 1 cent there are 10 mills, in 5 cents there are 5 times 10 mills, which are 50 mills.

Therefore, in 5 cents there are 50 mills.

2. How many dimes in 8 dollars? in 6 dollars? in ? dollars?

3. How many dollars in 8 eagles? in 6 eagles? in 5 eagles?

4. How many cents in 3 dimes? in 6 dimes? in 3 dimes?

5. If 1 pair of gloves costs 10 dimes, how many dimes will 7 pairs cost? 5 pairs? 9 pairs? 8 pairs?

6. How many cents in 80 mills?

SOLUTION.—Since in 10 mills there is 1 cent, in 80 mills there are as many cents as 10 mills are contained times in 80 mills, which are 8 times.

Therefore, in 80 mills there are 8 cents.

7. How many dimes in 70 cents? in 90 cents?

8. How many dollars in 90 dimes? in 70 dimes?

9. How many eagles in 70 dollars? in 30 dollars?

10. What will 7 apples cost at 3 cents apiece? at 6 cents? at 8 cents?

11. How many cents will 4 yards of cloth cost at 3 dimes a yard?

12. What will 4 handkerchiefs cost at 7 dimes apiece.

13. How many cents in 3 eagles? 2 dollars? in 4 dollars? 2 dimes?

## LESSON III.

## ENGLISH MONEY.

English Money is the currency of Great Britain.

The Denominations are pounds, shillings, pence, and farthings.

The Coins are the sovereign, half-sovereign, shilling, six-pence, penny, half-penny, and farthing.

## TABLE.

4 farthings (far.)	make	1 penny.	d.
12 pence	make	1 shilling.	s.
20 shillings	make	{ 1 pound or sovereign. }	£.
21 shillings	make	1 guinea.	guin.



Copper—2 cts.



Silver—12 cts.



Silver—24 cts.



Far.—Copper—5 mills.



Sov.—Gold—\$4 84.



Silver—18 cts.

*Note.*—The franc is a French coin.

LESSON IV.



Copper—1 cent.



Half Sov.—Gold—\$2 42.

MENTAL EXERCISES.

1. How many farthings in 4 d.?

SOLUTION.—Since there are 4 farthings in 1 penny, in 4 pence there are 4 times 4 farthings, which are 16 farthings.

Therefore, in 4 pence there are 16 farthings.

2. How many farthings in 9 pence? in 8 d.? in 12 d.?

3. How many shillings in 3 pounds? in 2 £? in 4 £?

4. How many shillings in 2 guineas? in 3 guin.? in 4 guin.?

5. How many shillings in 3 sovereigns? in 6 sov.?

6. How many shillings in 48 pence?

SOLUTION.—Since in 12 pence there is 1 shilling, in 48 pence there are as many shillings as 12 pence are contained times in 48 pence, which are 4 times.

Therefore, in 48 pence there are 4 shillings.

7. How many pence in 48 farthings? in 44 farthings?

8. How many shillings in 36 pence? in 60 pence?

9. How many pounds in 80 shillings? in 40 shillings?

10. How many guineas in 42 shillings? in 63 s.?

11. Change 3 shillings to pence.

12. Change 108 pence to shillings.

13. Change 3 guineas to shillings.

## LESSON V.

## AVOIRDUPOIS WEIGHT.

Avoirdupois Weight is used for all ordinary purposes.

The Denominations are tons, hundred-weights, quarters, pounds, ounces, and drams.

TABLE.

16 drams (dr.) make	1 ounce.	oz.
16 ounces make	1 pound.	lb.
25 pounds make	1 quarter.	qr.
100 pounds or 4 quarters } make	1 { hundred weight. }	cwt.
20 hundred weight make	1 ton.	T.

TABLE OF THE LONG TON.

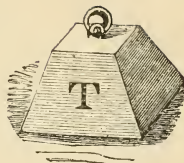
28 pounds (lbs.)	make	1 quarter	marked	qr.
4 quarters	make	1 hundred weight	"	cwt.
20 hundred weight	make	1 gross ton	"	G. T.

27 $\frac{1}{3}$  gr.\*437 $\frac{1}{2}$  gr.

7000 gr.

\* Note.—The exact weight of an Avoirdupois dram is 27 $\frac{1}{32}$  Troy grains.

LESSON VI.



1 firkin.



1 barrel.



1 barrel.



1 barrel.



1 bushel.



1 bushel.



1 bushel.



1 bushel.

## LESSON VII.

## MENTAL EXERCISES.

1. How many drams in 2 ounces? in 3 oz.?
2. How many ounces in 2 pounds? in 3 lbs.?
3. How many pounds in 4 quarters or 1 cwt.?
4. How many quarters in 8 hundred weight?
5. How many hundred weight in 2 tons?
6. How many ounces in 32 drams?
7. In 48 ounces how many pounds?
8. In 40 quarters how many hundred weight?
9. In 60 hundred weight how many tons?
10. In 50 pounds how many quarters?
11. In 80 ounces how many pounds?
12. How many quarters in 100 pounds?
13. How many ounces in 80 drams?
14. How many tons in 80 hundred weight?
15. How many ounces in 6 pounds?
16. What will 2 ounces of cinnamon cost at 8 cents an ounce?
17. What will 3 pounds of rice cost at 12 cents a pound?
18. What will 3 hundred weight of hay cost at 3 dollars per hundred weight?
19. At 8 cents an ounce, how many ounces of pepper can I buy for 40 cents?
20. At 12 cents a pound, how many pounds of sugar can be bought for 84 cents?



## LESSON VIII.

## TROY WEIGHT.

Troy Weight is used in weighing gold, silver and jewels, and in philosophical experiments.

The Denominations are pounds, ounces, pennyweights, and grains.

## TABLE.

24 grains (gr.)	make 1 pennyweight.	pwt.
20 pennyweights	make 1 ounce.	oz.
12 ounces	make 1 pound.	lb.



*Note.*— $3\frac{1}{8}$  grains make a carat, Diamond weight.

## MENTAL EXERCISES.

1. How many grains in 2 pennyweights?
2. In 72 grains how many pennyweights?
3. How many pennyweights in 3 ounces?
4. In 80 pennyweights how many ounces?
5. How many ounces in 9 pounds?
6. How many pounds in 36 ounces?
7. How many grains in 7 pennyweights?

## LESSON IX.

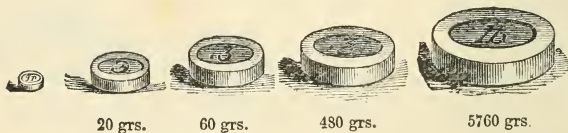
## APOTHECARIES' WEIGHT.

Apothecaries' Weight is used by physicians in compounding medicines; but medicines are bought and sold by avoirdupois weight.

The Denominations are pounds, ounces, drams, scruples, and grains.

TABLE.

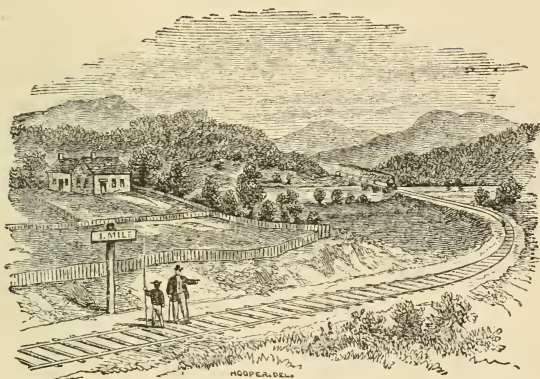
20	grains (gr.)	make	1	scruple.	sc. or ℥.
3	scruples	make	1	dram.	dr. or ℥.
8	drams	make	1	ounce.	oz. or ℥.
12	ounces	make	1	pound.	lb. or lb.



## LESSON X.

## MENTAL EXERCISES.

1. How many grains in 3 scruples? in 4 scruples?
2. How many scruples in 11 drams? in 9 drams?
3. How many scruples in 80 grains? in 40 grains?
4. How many drams in 27 scruples? in 24 ℥?
5. How many ounces in 24 drams? in 16 ℥?
6. How many ounces in 12 pounds? in 10 pounds?
7. How many ounces in 96 drams? in 88 ℥?
8. In 7 ounces how many drams?



WILLIAM.—Father, how far is a mile?

FATHER.—To make a *foot*, cut 12 sticks each an *inch* long, and place them in a row.

To make a *yard*, cut a string three times as long as your row of sticks.

To make a *rod*, cut a pole like the one in your hand, five and a-half times the length of the string.

Forty times the length of the pole is the length of the door-yard fence yonder, or one *furlong*.

Eight times the length of the fence, is the distance from the guide-post to the rail-road bridge, or one *mile*.

We have just time to walk down to the bridge and back before dinner; how far will that be?

## LESSON XI.

## LINEAR MEASURE.

**Linear Measure** is used for measuring distance.

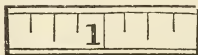
The **Denominations** are miles, furlongs, rods, yards, feet, and inches.

TABLE.

12 inches (in.)	make	1	foot.	ft.
3 feet	make	1	yard.	yd.
$5\frac{1}{2}$ yards or $11\frac{1}{2}$ half-yards, $16\frac{1}{2}$ feet	$\left. \begin{array}{l} \\ \\ \end{array} \right\}$ make	1	$\left\{ \begin{array}{l} \text{rod,} \\ \text{perch, or} \\ \text{pole.} \end{array} \right\}$	rd.
40 rods	make	1	furlong.	fur.
8 furlongs	make	1	mile.	mi.

TABLE OF MISCELLANEOUS LINEAR MEASURE.

4 inches	make 1 hand	$\left\{ \begin{array}{l} \text{used in measuring the} \\ \text{height of horses directly} \\ \text{over the fore-feet.} \end{array} \right\}$
9 inches	make 1 span.	
3 feet	make 1 pace, or step.	
6 feet	make 1 fathom	$\left\{ \begin{array}{l} \text{used in measuring the} \\ \text{depths at sea.} \end{array} \right\}$



## LESSON XII.

## CLOTH MEASURE.

**Cloth Measure** is used for measuring goods sold by the yard, as cloth, lace, ribbon, &c.

**The Denominations** are yards, quarters, inches, and nails.

## TABLE.

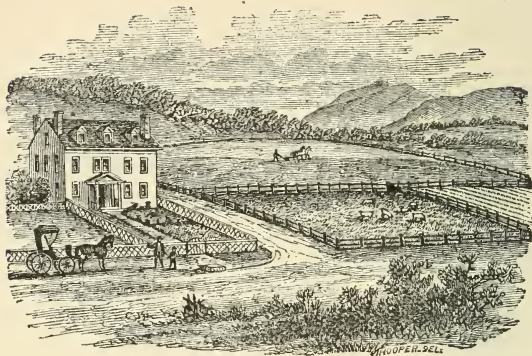
2 $\frac{1}{4}$ inches (in.)	make	1	nail.	na.
4 nails or } 9 inches }	make	1	quarter.	qr.
4 quarters	make	1	yard.	yd.

## LESSON XIII.

## MENTAL EXERCISES.

1. How many inches in 3 feet? in 6 feet?
2. How many feet in 8 yards? in 12 yards?
3. How many *half*-yards in 22 yards?
4. How many rods in 44 half-yards?
5. How many rods in 33 yards? \*
6. How many rods in 44 yards?
7. How many furlongs in 5 miles? in 9 miles?
8. How many nails in 3 quarters?
9. How many quarters in 7 yards?
10. How many nails in 3 quarters and 2 nails?
11. How many yards in 44 quarters?
12. How many quarters in 24 nails?
13. How many inches in 1 yard?
14. How many yards in 36 inches?
15. How many yards in 48 quarters?

\* Change the yards to *half*-yards, then the *half*-yards to rods.



FATHER.—Charles, if you wish to know how much land my farm contains, cut 144 pieces of paper one *inch* square, and place them in a large square; this is called a square *foot*.

To make a square *yard*, place 9 square feet in a large square.

To make a piece of land the size of the flower-bed in the door-yard, it will require  $30\frac{1}{4}$  square yards, which is called a square *rod*.

Forty square rods is just one *rood*, or a *quarter* of an acre of land, and is the size of the lot across the road in which you see the sheep.

The lot in which you see the man plowing, contains 4 roods of land, and is called an *acre*.

640 acres make one square *mile* of land, which is the size of my farm.

We will ride over it after you have recited the table.

LESSON XIV.

SQUARE MEASURE.

Square Measure is used in computing the area of surfaces.

The Denominations are acres, roods, square rods, square yards, square feet, and square inches.

TABLE.

144	square inches (in.)	make 1	square foot.	sq. ft.	
9	square feet	make 1	square yard.	sq. yd.	
30 $\frac{1}{4}$	square yards or	} make 1	square rod.	sq. rd.	
121	qr. square yards				
40	square rods	make 1	{ rood or quar- } R.		
			{ ter of an acre. }		
4	{ quarter-acres or	} make 1	acre.	A.	
	roods, or				
160	square rods				
640	acres	make 1	{ square mile } sq. m.		
			{ or section. }		

LESSON XV.

MENTAL EXERCISES.

1. In 3 square yards how many square feet?
2. How many roods in 9 acres? in 7 acres?
3. How many acres in 16 roods? in 48 roods?
4. How many roods in 80 square rods?
5. How many roods in 5 acres?
6. How many acres in 16 quarter-acres?

## LESSON XVI.

## CUBIC MEASURE.

Cubic Measure is used to estimate the contents of solids.

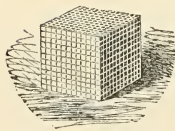
The Denominations are cords, tons, cubic yards, cubic feet, and cubic inches.

## TABLE.

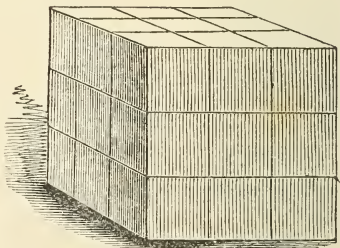
1728 cubic inches (cu. in.)	make 1 cubic foot.	cu. ft.
27 cubic feet	make 1 cubic yard.	cu. yd.
16 cubic feet	make 1 cord foot.	cd. ft.
42 cubic feet	make 1 ton, shipping.	t. s.
8 cord feet or }	make 1 cord of wood.	cd.
128 cubic feet }		



Cubic inch.



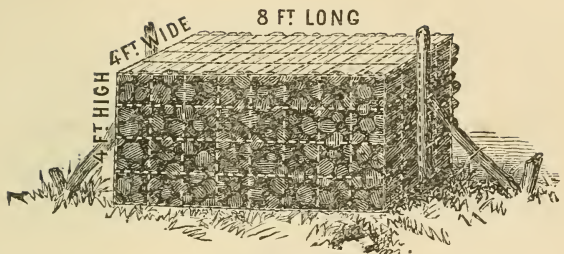
Cubic foot.



Cubic yard.

*Note.*— $21\frac{3}{4}$  cubic feet make 1 perch of stone or masonry.





Cord of wood.

## LESSON XVII.

## MENTAL EXERCISES.

1. How many cord feet in 2 cords? in 5 cords?
2. In 32 cubic feet how many cord feet?
3. How many cubic feet in 2 cubic yards?
4. How many cubic feet in 3 cubic yards?
5. How many feet in 3 cord feet?
6. What will 3 cords of wood cost at \$5 a cord?
7. What will 3 cubic feet of granite cost at 12 cents per cubic foot?
8. How many inches in 7 feet? in 6 feet?
9. How many feet in 9 yards? in 7 yards?
10. How many *half*-yards in 8 yards?
11. How many yards in 88 half-yards?
12. How many furlongs in 8 miles? in 7 miles?
13. What is the difference between a foot in length and a square foot? a square foot and a cubic foot?

## LESSON XVIII.

## WINE MEASURE.

Wine Measure is used in measuring liquids.

The Denominations are hogsheads, barrels, gallons, quarts, pints, and gills.

## TABLE.

4	gills (gi.)	make 1 pint.	pt.
2	pints	make 1 quart.	qt.
4	quarts	make 1 gallon.	gal.
31 $\frac{1}{2}$	gallons or	make 1 barrel.	bbl.
63	half gals. }		
2	barrels or	make 1 hogshead.	hhd.
63	gallons }		



1 barrel.

1 hogshead.

## LESSON XIX.

## MENTAL EXERCISES.

1. How many gills in 6 pints? in 8 pints?
2. How many pts. in 12 quarts? in 8 qts.?
3. How many quarts in 11 gallons?
4. In 24 pints how many quarts?
5. In 16 quarts how many gallons?
6. In 24 gills how many pints?

## LESSON XX.

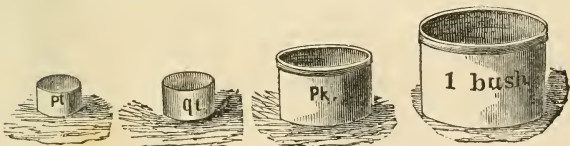
## DRY MEASURE.

Dry Measure is used in measuring vegetables and articles not fluid.

The Denominations are bushels, pecks, quarts, and pints.

## TABLE.

2	pints (pt.)	make	1	quart.	qt.
8	quarts	make	1	peck.	pk.
4	pecks	make	1	bushei.	bu.



*Note.*—36 bushels make a chaldron.

## LESSON XXI.

## MENTAL EXERCISES.

1. How many pints in 9 quarts? in 7 quarts?
2. In 14 pints how many quarts?
3. In 8 bushels how many pecks?
4. In 12 pecks how many quarts?
5. In 32 quarts how many pecks?

## LESSON XXII.

## MEASURE OF TIME.

Time is the measure of duration.

The Denominations are centuries, years, months, weeks, days, hours, minutes, and seconds.

TABLE.

60 seconds (sec.)	make 1 minute.	min.
60 minutes	make 1 hour.	h.
24 hours	make 1 day.	da.
7 days	make 1 week.	wk.
4 weeks and 2 days or } 30 days	make 1 month.	mo.
365 days	make 1 year.	yr.
52 weeks	make 1 year.	yr.
12 calendar months	make 1 year.	yr.
100 years	make 1 century.	C.

## DIVISION OF THE YEAR.

Season.	Names of months.	No. of days.	Abbreviations.
Winter,	{ 1. January,	31	Jan.
	{ 2. February,	28 or 29	Feb.
	{ 3. March,	31	Mar.
Spring,	{ 4. April,	30	Apr.
	{ 5. May,	31	—,
	{ 6. June,	30	Jun.
Summer,	{ 7. July.	31	—,
	{ 8. August,	31	Aug.
	{ 9. September,	30	Sept.
Autumn,	{ 10. October,	31	Oct.
	{ 11. November,	30	Nov.
Winter,	12. December.	31	Dec.

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365 or 366

LESSON XXIII.

TABLE OF ROMAN NOTATION.

I	denotes	one.	XXX	denotes	thirty.
II	"	two.	XL	"	forty.
III	"	three.	L	"	fifty.
IV	"	four.	LX	"	sixty.
V	"	five.	LXX	"	seventy.
VI	"	six.	LXXX	"	eighty.
VII	"	seven.	XC	"	ninety.
VIII	"	eight.	C	"	one hundred.
IX	"	nine.	CI	"	one hundred one.
X	"	ten.	CC	"	two hundred.
XI	"	eleven.	CCC	"	three hundred.
XII	"	twelve.	CCCC	"	four hundred.
XIII	"	thirteen.	D	"	five hundred.
XIV	"	fourteen.	DC	"	six hundred.
XV	"	fifteen.	DCC	"	seven hundred.
XVI	"	sixteen.	DCCC	"	eight hundred.
XVII	"	seventeen.	DCCCC	"	nine hundred.
XVIII	"	eighteen.	M	"	one thousand.
XIX	"	nineteen.	MD	"	fifteen hundred.
XX	"	twenty.	MM	"	two thousand.
XXI	"	twenty-one.	$\overline{X}$	"	ten thousand.
XXII	"	twenty-two.	$\overline{M}$	"	one million.
XXIII	"	twenty-three.	$\overline{MM}$	"	two millicn.
XXIV	"	twenty-four.			

COUNTING.

12 units or things	make	1 dozen.
12 dozen	"	1 gross.
12 gross	"	1 great gross.
20 units	"	1 score.

PAPER.

24 sheets	make	1 quire.
20 quires	"	1 ream.
2 reams	"	1 bundle.
5 bundles	"	1 bale.

## LESSON XXIV.

## TABLE OF CIRCULAR AND ANGULAR MEASURE.

Circular and Angular Measure is used in measuring the arcs of circles and difference of directions.

The Denominations are circles, right-angles, quadrants, signs, degrees, minutes, and seconds.

60	seconds (")	make	1	minute.	'
60	minutes	make	1	degree.	°
30	degrees	make	1	sign.	sig.
90	degrees	make	{ 1	quadrant.	quad.
			{ 1	right angle.	r. a.
4	quadrants	{	{ 1	circumference	{ cir.
or 12	signs			or circle.	

## FRACTIONS.

## LESSON XXV.



Two halves.



Three thirds.



Four fourths.



Five fifths.

1. How many halves in one apple? 2 apples?
2. How many halves in one peach? 3 peaches?
3. How many thirds in one pie? 2 pies?



One half.



One third.



Two fourths.

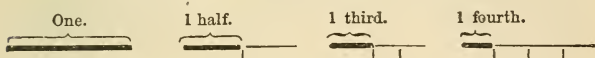


Three fifths.

1. How many halves make one melon? 2 melons?
2. How many thirds make one pear? 2 pears?
3. How many fourths make one orange? 2 oranges?

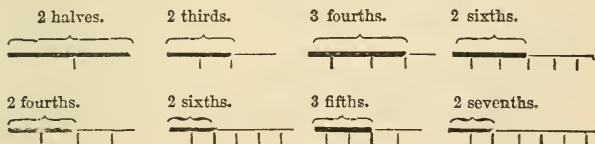
4. What is meant by one-half? \* *Ans. One of the two equal parts into which a thing or a number of things is divided.*

5. What is meant by one-third? By one-fifth? By one-seventh? By one-eighth? By one-fourteenth?



6. What is meant by two-thirds? *Ans. Two of the three equal parts into which a thing or a number of things is divided.*

7. What is meant by three-fourths? By two-fifths? By three-sevenths? By 5 elevenths? By 3 tenths? By 3 fifths?



8. How many stars in 1 half of six stars? In 1 third of six stars?



9. How many apples in 1 eighth of 16 apples? In 1 fifth of 10 apples? In 1 third of 15 pears?

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\* NOTE FOR THE TEACHER.—The teacher should extend the illustrations in fractions on the blackboard, and by oral instruction make the subject clear to the class. These illustrations are only suggestive of what should be done.

10. How many are 1 third of 6 nuts? Of 12 oranges?  
Of 18 peaches? Of 21 lemons?

Fraction.	Name.	Fraction.	Name.	Fraction.	Name.
$\frac{1}{2}$	1 half.	$\frac{1}{6}$	1 sixth.	$\frac{2}{3}$	2 thirds.
$\frac{1}{3}$	1 third.	$\frac{1}{7}$	1 seventh.	$\frac{3}{5}$	3 fifths.
$\frac{1}{4}$	1 fourth.	$\frac{1}{10}$	1 tenth.	$\frac{5}{12}$	5 twelfths.
$\frac{1}{5}$	1 fifth.	$\frac{2}{4}$	2 fourths.	$\frac{7}{12}$	7 twelfths.

## LESSON XXVI.

## SUMMARY.\*

1. **Arithmetic** tells about numbers.
2. **Notation** is the art of writing numbers.
3. **There are ten** figures used in notation.
4. **A unit** is one of any kind of things.
5. **Addition** is finding the sum of two or more numbers.
6. **The answer** in addition is called the *sum*.
7. **Subtraction** is taking one number from another to find the difference.
8. **The minuend** is the number to be subtracted from.
9. **The subtrahend** is the number to be subtracted.
10. **The remainder** is the number left after subtracting.
11. **Multiplication** is finding the product of two numbers.

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\* NOTE FOR THE TEACHER.—This summary should be first discussed by the class in oral lessons before being committed to memory. (See Manual of Arithmetic, Sec. II.)



12. **The multiplicand** is the number to be multiplied.

13. **The multiplier** is the number to multiply by.

14. **The product** is the result of multiplication.

15. **Division** is finding how many times one number is contained in another.

16. **The dividend** is the number to be divided.

17. **The divisor** is the number to divide by.

18. **The quotient** is the result of division.

19. **The remainder** is the part of the dividend left after dividing.

#### SIGNS.

\$ dollar sign.	+ addition.	× multiplication.
= equality.	− subtraction.	÷ division.

#### LESSON XXVII.

#### UNITED STATES MONEY.

**The Dollar Sign** (\$) is used to denote dollars.

**The Decimal Point** (.) is always placed between dollars and cents.

#### TABLE OF ALIQUOT PARTS.

$\frac{1}{2}$  dol. = 50 cts.

$\frac{3}{4}$  dol. = 75 cts.

$\frac{1}{4}$  " = 25 cts.

$\frac{1}{2}$  ct. = 5 mills.

## REDUCTION AND ADDITION.\*

## MODEL OPERATIONS.

$$\begin{array}{rcl}
 \$10 & = & \overbrace{10.000}^{\text{dols.}} \\
 3 \text{ dol.} & = & 3.000 \\
 \$2\frac{1}{4} & = & 2.250 \\
 \frac{3}{4} \text{ dol.} & = & .750 \\
 \$2.12\frac{1}{2} & = & 2.125
 \end{array}$$

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\$18.125    Ans.

$$\begin{array}{rcl}
 114 \text{ cts.} & = & \overbrace{\$1.140}^{\text{dols.}} \\
 \frac{1}{2} \text{ ct.} & = & 0.005 \\
 3 \text{ mills} & = & 0.003 \\
 7 \text{ ct.} & = & 0.070 \\
 21 \text{ mills} & = & 0.021
 \end{array}$$

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\$1.239    Ans.

1. Add	2. Add	3. Add	4. Add	5. Add	6. Add
5 doll.	\$21	\$400	\$600	4 ct.	\$3
$3\frac{1}{2}$ "	\$7 $\frac{1}{2}$	\$17 $\frac{3}{4}$	\$20	13 ct.	40 ct.
$\frac{3}{4}$ "	\$2 $\frac{3}{4}$	\$200 $\frac{1}{2}$	\$1	$\frac{1}{2}$ ct.	25 m.
$2\frac{1}{2}$ "	\$40 $\frac{1}{2}$	\$ $\frac{3}{4}$	\$ $\frac{1}{2}$	2 m.	\$2 $\frac{1}{2}$
$3\frac{3}{4}$ "	\$25 $\frac{3}{8}$	\$500 $\frac{1}{4}$	\$ $\frac{3}{4}$	7 m.	$2\frac{1}{2}$ ct.
7. Add	8. Add	9. Add	10. Add	11. Add	12. Add
50 ct.	34 m.	50 ct.	$\frac{1}{2}$ doll.	\$3 $\frac{3}{4}$	\$8 $\frac{1}{2}$
$25\frac{1}{2}$ ct.	$12\frac{1}{2}$ ct.	25 doll.	$\frac{1}{2}$ ct.	$3\frac{1}{2}$ ct.	\$30
$12\frac{1}{2}$ ct.	$12\frac{1}{2}$ doll.	$12\frac{1}{2}$ doll.	$10\frac{1}{2}$ doll.	$5\frac{1}{2}$ doll.	$\frac{3}{4}$ doll.
80 m.	20 ct.	$12\frac{1}{2}$ ct.	$10\frac{1}{2}$ ct.	200 ct.	$\frac{1}{2}$ ct.
16 m.	20 m.	60 m.	300 m.	200 doll.	500 m.

## LESSON XXVIII.

## SUBTRACTION.

(a.) From \$20 take 20 cts.

(c.) From  $\frac{3}{4}$  doll. take  $\frac{1}{2}$  ct.(b.) From \$2 $\frac{1}{2}$  take  $2\frac{1}{2}$  cts.(d.) From \$5 $\frac{3}{4}$  take 50 mills.

\* Before leaving the subject the teacher should dictate to the class, at least, ten problems similar to each of the following.

† Fractions should in every case be changed to cents and mills.

## MODEL OPERATIONS.

(a.)	(b.)	(c.)	
\$20.000	\$2.500	\$0.750	\$5.750
.200	.025	.005	.050
<hr/>	<hr/>	<hr/>	<hr/>
\$19.800 Ans.	\$2.475 Ans.	\$0.745 Ans.	\$5.700 Ans.

13. From \$2 take 20 cts. Take 99 cts.
14. From  $2\frac{1}{2}$  take 25 cts. Take 50 cts.
15. From \$100 take 100 cts. Take 10 cts.
16. From  $40\frac{3}{4}$  take 40 cts. Take 40 dol.
17. From \$200 take 200 cts. Take 200 dol.
18. From \$25 take 25 cts. Take 25 mills.
19. From  $2\frac{1}{2}$  dol. take  $2\frac{1}{2}$  cts. Take  $2\frac{1}{2}$  dol.
20. From  $62\frac{1}{2}$  cts. take  $12\frac{1}{2}$  cts. Take 12 mills.
21. From  $18.90\frac{1}{2}$  take  $1.12\frac{1}{2}$ . Take 5 mills.
22. From \$6 7 cts. 9 mills take  $3.37\frac{1}{2}$ .
23. From  $5\frac{3}{4}$  take  $1.62\frac{1}{2}$ . Take 125 mills.
24. From \$1000 take 1000 cts. Take 1000 mills.
25. From  $\frac{1}{2}$  dol. take  $\frac{1}{2}$  ct. Take 50 mills.

## LESSON XXIX.

## MULTIPLICATION.

- (a.) Multiply  $37\frac{3}{4}$  by 4. (b.) Multiply  $87\frac{1}{2}$  ct. by 23.

## MODEL OPERATIONS.

(a.)	(b.)
\$37.75	\$0.875
4	23
<hr/>	<hr/>
\$151.00 Ans.	2.625
	17.50
	<hr/>
	\$20.125 Ans.

26. Multiply  $\$35\frac{1}{2}$  by 6, by 11, by 35, by 108.
27. Multiply  $\$2.27$  by 4, by 12, by 200, by 207.
28. Multiply  $\$3.37\frac{1}{2}$  by 11, by 4, by 306, by 2002.
29. Multiply  $\$3\frac{3}{4}$  by 26, by 37, by 4007, by 20.
30. Multiply  $\$4.312$  by 6, by 201, by 38, by 400.
31. Multiply  $37\frac{1}{2}$  cts. by 16, by 26, by 106, by 6006.
32. Multiply 2 cts. 7 mills by 4, by 24, by 100, by 3000.
33. Multiply  $\$2\ 2\ m.$  by 6, by 5, by 25, by 37.
34. Multiply 3 dol. 3 cts. 3 mills by 3, by 4, by 7, by 10.
35. Multiply 8 dol. 8 mills by 2, by 22, by 202, by 10.
36. Multiply  $3\frac{3}{4}$  dol.  $\frac{1}{2}$  ct. by 3, by 303, by 2, by 8.

## LESSON XXX.

## DIVISION.

- (a.) Divide  $\$3$  by 6.      (c.) Divide 8 cts. by 12.  
 (b.) Divide  $\$30\frac{1}{2}$  by 20.      (d.) Divide  $\$1.12\frac{1}{2}$  by 12.

## MODEL OPERATIONS.

(a.)	(b.)	(c.)	(d.)
6) $\$3.000$	20) $\$30.500$	12) $\$0.080$	12) $\$1.125$
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
$\$0.500$ Ans.	$\$1.525$ Ans.	$\$0.006 + *$ Ans.	$\$0.093 +$ Ans.

37. Divide  $\$25$  by 8, by 5, by 9, by 12.
38. Divide  $\$30$  by 11, by 6, by 9, by 13.
39. Divide  $\$4\frac{1}{2}$  by 9, by 7, by 11, by 14.
40. Divide  $\$3\frac{3}{4}$  by 7, by 2, by 4, by 20.
41. Divide  $\$8.36$  by 4, by 2, by 11, by 7.
42. Divide  $\$1.12\frac{1}{2}$  by 3, by 7, by 9, by 11.
43. Divide  $87\frac{1}{2}$  cts. by 20, by 37, by 36, by 28.
44. Divide 3 cts. by 7, by 11, by 30, by 25.

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\* NOTE.—The sign of addition placed after an answer shows that there is a remainder, the value of which is so little as not to be noticed.

45. Divide 15 cts. by 11, by 30, by 15, by 150.

How many times are  $12\frac{1}{2}$  cts. contained in \$4? In  $\$3\frac{3}{4}$ ?

#### MODEL OPERATIONS.

\$0.125) \$4.000 (32 Ans.    \$0.125) \$3.750 (30 Ans.

$$\begin{array}{r} 375 \\ \hline 250 \\ 250 \\ \hline \end{array}$$

$$\begin{array}{r} 375 \\ \hline 0 \end{array}$$

*RULE.*—Change the divisor and dividend to the lowest denomination found in either, (if not so), and divide as in simple division.

46. How many times are 3 cts. contained in \$3? In \$3.33?

47. How many times are  $5\frac{1}{2}$  cts. contained in  $\$5\frac{1}{2}$ ? In \$203 $\frac{1}{2}$ ?

48. How many times are 20 cts. contained in \$20? In \$2? In \$5.20?

49. How many times are  $\$1.12\frac{1}{2}$  contained in  $\$10.12\frac{1}{2}$ ? In  $\$12.37\frac{1}{2}$ ?

50. \$1.40 are how many times 4 cts.? 40 cts.?  $5\frac{1}{2}$  cts.?

51.  $\$6\frac{3}{4}$  are how many times 25 cts.? 5 cts.? 9 cts.?

#### LESSON XXXI.

#### APPLICATIONS OF U. S. MONEY.\*

52. A boy bought a book for \$1, a slate for 50 cts. and a sponge for  $12\frac{1}{2}$  cts.; how much did he give for all?

53. A lady bought some calico for  $37\frac{1}{2}$  cts. and some lace for  $\$1\frac{3}{4}$ ; what did she give for both?

54. A boy had a three dollar bill; he paid out  $\$1.37\frac{1}{2}$ ; how much had he left?

\* NOTE FOR THE TEACHER.—The formulas to be used in the solution of these problems are the same as those used in simple numbers.

55. Lucy bought a book for 30 cts., an inkstand for  $62\frac{1}{2}$  cts., and some paper for  $12\frac{1}{2}$  cts.; how much did she spend?

56. John had  $\$11.37\frac{1}{2}$ , he gave  $2\frac{1}{2}$  dollars to William; how much had he left?

57. A boy earned  $\$5\frac{3}{4}$  in a week, he gave his father  $\$4\frac{1}{2}$ ; how much had he left?

58. A boy found 30 cts., he then earned  $2\frac{1}{2}$  dollars; how much had he then?

59. What will 20 apples come to at 2 cts. apiece? At 3 cts.? At  $2\frac{1}{2}$  cts.?

60. If the interest on one dollar for one year is 6 cts., what is the interest on  $\$347$ ? On  $\$276$ ?

61. If  $\frac{1}{8}$  of a house is worth  $\$371.26$ , what is  $\frac{8}{8}$  eighths or the whole house worth?

62. A man gave  $\$387.27\frac{1}{2}$  for  $\frac{1}{18}$  of a ship; what is  $\frac{15}{18}$  eighths of the ship worth?

63. One-sixth of a church cost  $\$1397.87\frac{1}{2}$ ; what did  $\frac{5}{6}$  sixths of the church cost?  $\frac{6}{6}$  sixths?

64. One-ninth of a factory is worth  $\$876.43$ ; what is  $\frac{5}{9}$  ninths worth?  $\frac{9}{9}$  ninths, or the whole?

65. Seven boys had  $\$12\frac{1}{2}$ ; how much is that apiece?

FORM.— $\$12\frac{1}{2}$  are equal to 12500 mills; if 7 boys had 12500 mills, 1 boy must have  $\frac{1}{7}$  seventh of 12500 mills, which is  $1785\frac{1}{7}$  mills, or  $\$1.785$ .

66. If 9 boys earned  $\$4\frac{1}{4}$ , how much did one boy earn? If they earned  $\$5\frac{3}{4}$ ?  $\$10.87\frac{1}{2}$ ?

67. If I give  $\$1.37\frac{1}{2}$  for a book how much will 16 copies cost? 27 copies? 1002 copies? 9070 copies.

68. If one pound of beef costs  $16\frac{1}{2}$  cts. how much will 3 pounds cost? 43 pounds? 307 pounds? 4003 pounds?

69. Seven pounds of sugar cost  $\$1.17$ ? how much is that per pound? If it cost  $\$1.20$ ? If it cost  $\$1\frac{1}{4}$ .

70. Eight pounds of cheese cost  $\frac{3}{4}$  of a dollar; how much was that a pound? If it cost  $\$1\frac{1}{4}$ ?

71. I have a dollar bill; how many oranges can I buy with it at 5 cents apiece? At  $2\frac{1}{2}$  cts.?

72. How many pounds of beef can be bought for  $\$1.62\frac{1}{2}$  at  $12\frac{1}{2}$  cts. per pound?

73. How many oranges can be bought for 80 cents at 5 cts. apiece? At  $2\frac{1}{2}$  cts.?

74. How many pounds of rice can be bought for  $\$4.32$ , at 4 cts. per pound? At 8 cts. per pound?

75. At 50 cts. a yard how many yards of cloth can be bought for  $\$12$ ? For  $\$16$ ? For  $\$18\frac{1}{2}$ .

76. How much will 5 baskets of peaches cost at  $\$1.62\frac{1}{2}$  per basket? At  $\$1.87\frac{1}{2}$ ? At  $90\frac{1}{2}$  cts.?

77. What will 117 pounds of cheese cost at  $16\frac{1}{2}$  cts. per pound. At  $12\frac{1}{2}$  cts.? At 11 cts.? At 16 cts.?

78. What must I give for 1 yard of lace, if 7 yards cost  $\$7.50$ ?  $\$13\frac{3}{4}$ ?  $\$9.87\frac{1}{2}$ ?  $\$20$ ?

79. What must I give for 1 bushel of potatoes, if 13 bushels cost  $\$8.90$ ?  $\$4.37$ ?  $\$11.87\frac{1}{2}$ ?  $\$12$ ?

80. What will 1 pound of sugar cost, if 190 pounds cost  $\$30$ ?  $\$35.50$ ?  $\$27\frac{1}{2}$ ?  $\$33.33\frac{1}{2}$ ?

81. What must I pay per gallon for vinegar, if 63 gallons or a hogshead costs  $\$50$ ?  $\$35$ ?

82. A boy had 400 cts., he gave away  $12\frac{1}{2}$  cts., how much had he left?

83. If the interest on one dollar for a year is  $5\frac{1}{2}$  cts., how much will it be on  $\$20$ ? On  $\$75$ ? On  $\$375$ ?

84. If the interest on one dollar for a year is  $7\frac{1}{2}$  cts., how much will it be for 3 yrs.? For 30 yrs.?

85. If the interest on one dollar for a year is  $7\frac{1}{2}$  cts., how much will it be for  $\$3$ ? For  $\$2003$ ?

86. What will 12 pounds of pepper cost at 22 cts. per pound? At 19 cts.? At  $18\frac{1}{2}$  cts.? At \$0.20.?

87. What must I give for 70 pounds of butter at  $37\frac{1}{2}$  cts. per pound? At 50 cts.? At  $\$0.40\frac{1}{2}$ ?

88. What must be given for 200 pounds of pork at  $18\frac{1}{2}$  cts. per pound? At  $12\frac{1}{2}$  cts.? At \$0.22?

89. What will a firkin of butter be worth at 56 cts. per pound? At  $37\frac{1}{2}$  cts.? At \$0.42?

90. What will a barrel of flour cost at 8 cts. per pound? At  $2\frac{1}{2}$  cts.? At 6 cts.? At  $0.07\frac{1}{2}$ ?

91. What must I give for a barrel of beef at 11 cts. per pound. At  $9\frac{1}{2}$  cts.? At  $\$0.12\frac{1}{2}$ ? At 13 cts.?

92. What must be given for a barrel of fish at  $12\frac{1}{2}$  cts. per pound? At  $8\frac{1}{2}$ ? At \$0.09? At  $\$0.15\frac{1}{2}$ ?

93. What will a barrel of salt cost at 2 cts. per pound? At 1 ct.? At  $\frac{1}{2}$  ct.? At  $\$0.01\frac{1}{2}$ ?

94. What will a bushel of oats cost at 2 cts. per pound? At  $1\frac{1}{2}$  cts? At  $\$0.03\frac{1}{2}$ ? At  $\$0.02\frac{1}{2}$ ?

95. What must I give for a bushel of barley at 2 cts. per pound? At  $2\frac{1}{2}$  cts.? At  $1\frac{1}{2}$  cts.

96. What must be given for a bushel of wheat at 3 cts. per pound? At  $3\frac{1}{2}$  cts.? At  $2\frac{1}{2}$  cts.

97. A farmer sold a bushel of rye at  $2\frac{1}{2}$  cts. per pound; how much did he receive?

98. A man bought a bushel of corn for \$1.18; how much was that a pound?

99. A man bought a bushel of rye for 98 cts; how much was that per pound?

100. A man bought a bushel of wheat for \$2.25; what was that per pound?

101. How many pounds in 3 firkins of butter? In 9 barrels of flour? In 8 barrels of beef? In 7 barrels of salt?



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